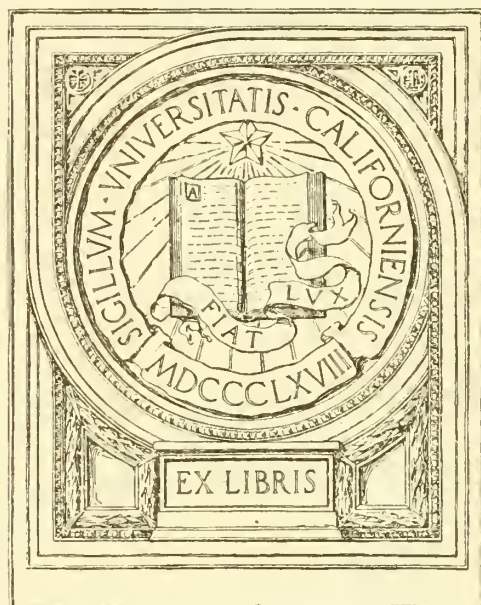



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MINNESOTA MEDICINE

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ORIGINAL ARTICLES

THE DIAGNOSIS OF GASTRIC AND DUODENAL ULCER WITHOUT THE AID OF A MODERN LABORATORY AND THE ROENTGEN RAY*

O. J. HAGEN, M.D., F.A.C.S.
Moorhead, Minn.

Dr. Graham once said: "No methods or measures are of more importance to sound and exact diagnosis than a carefully developed history with the proper interpretation and logical correlation of symptoms."

Moynihan has said he can make a diagnosis of duodenal ulcer by correspondence.

Mr. B. writes to his doctor as follows: I am forty years of age; I have had stomach trouble for years; "spells" come on after a strenuous season, usually spring and fall, lasting for a few weeks; I have a disgust for fats; pain begins three to five hours after eating, radiates towards the liver; I can feel on pressure a tender spot a little to the right and above the umbilicus; I belch gas, there is a sense of fullness, distension, gnawing and burning; the pain lasts until the next meal; my appetite is good; I am constipated; there is heart-burn, some vomiting; food relieves me of pain if eaten between meals; soda helps to ease me and if the doctor washes out my stomach, I feel much better. I have lately been awakened at midnight with a pain in my stomach. This whole series of events recur regularly after each meal, from day to day, and the siege has lasted for almost three weeks. I had the same "spell" last fall, and a similar trouble for many years, off and on. Doctor, what have I?

This is the kind of story Moynihan had in mind when he said he could make the diagnosis of duodenal ulcer by correspondence.

If Mrs. B. writes one week later that Mr. B.

fainted day before yesterday and that today a tarry stool was noticed we would say the plot thickens and conclude that he not only has a duodenal ulcer but that he has had a hemorrhage. And if another letter follows—a letter with a black border—in which Mrs. B. relates that her husband had begun to feel much better, but that all of a sudden, one day while working out in the yard, he was seized with a severe pain in his stomach, forcing him to lie absolutely still, with his knees drawn up, breathing spasmodically, groaning, later developing a drum-like abdomen, and that after four days he died, surely one can from such a history and chain of evidence write, without any mental reservation whatsoever, that "Mr. B. died from peritonitis directly resultant from a perforated duodenal ulcer" and that in spite of the fact that the local doctor summoned on the second day, without asking any questions, pronounced it an acute perforated appendix.

The gastric ulcer lacks definiteness in symptomatology compared with that of duodenal ulcer and it is this indefiniteness that helps in the establishment of the diagnosis. The symptoms depend on location of the ulcer, and that is one of the main reasons for the confusion. The patient is usually a male, age running from 25 to 40 years, and if around the latter age has probably had stomach disturbances for many years. He looks tired, somewhat pale and worried. He tells you that at first there was only discomfort after eating; that as the years came and went, the discomfort increased, that the element of pain entered in, and that it came on one-half to two hours after eating; that the character of the pain is a sense of fullness, distension, gnawing, boring, burning; that the duration of the pain is rather limited and that it recurs before the next meal; that there is fear of eating, appetite is not so good; that pressure over stomach relieves, so also reclining; that there is at times vomiting of food; that gas is pronounced, with water-brash and heart-burn; tenderness over epigastrium, extending to the left breast (cardiac ulcer), into the back and boring (posterior penetrating ulcer pain); that little food and soda

*Presented before the annual meeting of the Minnesota State Medical Association, Minneapolis, Minn., October, 1922.

give only temporary relief; that there is no night-pain; that the "spells" may come on any season, lasting from ten to thirty days, or may remain throughout the year; that blood has been vomited and that there is no cachexia.

Here then is a fairly definite history of a typical gastric ulcer on the symptomatology of which a diagnosis can be made.

Graham¹ differentiates ulcers thus: "Pain comes usually at an earlier period after eating in gastric ulcers than in duodenal. Pain at night appears to be more frequent in duodenal than gastric. Lying down causes ease more frequently in gastric ulcer. Vomiting occurs in 79 per cent of duodenal and 82 per cent of gastric. Gas was present in 77 per cent of duodenal and 94 per cent of gastric. Hemorrhage occurred in 25 per cent of the gastric and 18 per cent of the duodenal. Blood by bowel in a similar percentage of cases about equal in both classes of cases, an average of 27 per cent.

Let us not think that ulcers come only in early middle age.

Lockwood² of Pasadena, California, reported 125 cases of ulcer of the stomach in children, proven surgically or found at post-mortem, showing that it behooves the profession to stop thinking that ulcers have age limits and give the child who comes complaining of stomach trouble a thorough examination and not dispatch the little victim with the statement that it has indigestion. It is true that the incidence is less in children, due, as Fischl of Prague says, "to the small amount of acid in the gastric secretion, and to the motility and rapid emptying of the stomach." But that is no reason why we should continue ignorantly to call a child's trouble appendicitis, gastro-enteritis, ptomaine poisoning, etc. (Cabot says he has not seen a case of ptomaine poisoning in his experience.) So my plea is with Lockwood "to keep the possibility of gastric ulcer in mind in the examination of every child presenting abdominal symptoms."

All ulcers do not present the symptoms enumerated, the reason being that ulcers vary in location, vary in depth, vary in numbers. Some are located near the pylorus, some on the lesser curvature, some near the cardia, some on the anterior aspect. Some are calloused, some are penetrating, some are perforating; some have accompanying them a high acidity, some normal, some

a sub-acidity and some even have an achylia. Some have a complicating disease due to the same infection, such as appendicitis, a duodenal ulcer, some perigastric adhesions, some cholecystitis. You would not expect clear ulcer syndromes under such circumstances, and this accounts for the fact that the difficulties in making a diagnosis are so great. If you have a very small ulcer affecting just the mucous membrane, you would not expect a very marked symptomatology. If you have a large calloused ulcer near the pylorus you would not expect to have the same character of pain nor pain in the same place as in the ulcer located near the cardia, nor would the time of the onset of pain be the same. An ulcer penetrating posteriorly gives a boring pain directed into the back, while a duodenal ulcer would naturally have the pain over the duodenal area. The chemistry of the stomach would make a variation in the intensity of the heart-burn and the acid eructations. If the acid content is high, the demonstration of sour eructations would be marked.

What causes the phenomena of pain, gas, distension, hyper-acidity, heart-burn? Soper of St. Louis says: "Most investigators agree with Carlson that the pain in gastric and duodenal ulcer is largely, if not entirely, due to motor-phenomena. All gastro-intestinal pains of definite peripheral origin are essentially contraction pains." Hertz, Cannon, Carlson, Alvarez, in recent investigations, have shown the rôle motor disturbances play in gastro-intestinal symptomatology. The motor apparatus of the gastro-intestinal tract functions in a rhythmic, orderly fashion, and if nothing disturbs it we do not know we have one. Let an ulcer, for instance, invade the mucous membrane down into the muscular coats. At once it acts as an irritant and affects the rhythm. At once there is instituted a spasm of the pylorus, termed a pylorospasm. The pylorospasm produces hyperperistalsis, hypertonus, resulting in intra-gastric tension, and as a result you have pain. The pylorospasm continues and causes a delay in emptying the stomach, which results in hyperacidity, which in turn causes hypermotility and still more intra-gastric tension. If the stomach does not empty itself you have a distension and this distension explodes into eructations, belching, and vomiting, and if there is an hyperacidity it is sour and produces heart-burn. Eggleston³ says: "The cases which are free from pain and show perforation

as the first sign have no hyperchlorhydria and no pylorospasms."

What are the conditions that may simulate ulcer by reflexly affecting the stomach and masquerade as ulcers? The most frequent are: appendicitis, cholecystitis, cholelithiasis, gastric carcinoma, gastric syphilis, gastroparesis, migraine, myocarditis, aneurism, splenic anemia. Eliminate kidney disease, syphilis, tuberculosis, heart conditions, and splenic anemia, by careful inspection, percussion, and auscultation and an accurate history. Do not forget the Argyll-Robertson pupil and the knee-jerk, nor must the careful palpation for supraclavicular and umbilical glands and a mass in the epigastrium be omitted, to help rule out an advancing cancer. I mentioned splenic anemia for that gives gastric hemorrhage, as in ulcer, but although we have not the use of the clinical laboratory in this study of ulcer to help make a differential blood count, we do have palpating fingers that can make out an enlarged spleen.

If all stomach troubles giving an ulcer syndrome were due to ulcer, the task would still not be so very exacting. But other conditions remote from the stomach masquerade as ulcers and it is this state of affairs that "bids us pause." What are they?

1. *Appendicitis.* Appendicitis produces gastric symptoms. The appendix lies in the tract of the rhymatic wave. If infected, it acts as an irritant. Aaron has shown that in appendicitis pressure over McBurney point causes epigastric pain and pylorospasm. The affected organ sends a message upwards and a reflex pylorospasm results. The pain is not at first in the appendix (and if a pain does occur over the appendix area it is probably not appendicitis), the pain is in the epigastrium, due to the pylorospasm, and the pylorospasm causes the attending phenomena of vomiting and stomach distress—the symptoms that the patient invariably first complains of. It is not until several hours later or even the second day that the patient complains of a pain in the side, indicating that the inflammation has extended beyond the mucous membrane and wall, which are painless, into the sensitive peritoneal area.

If the condition is chronic, messages may still be sent up, ulcer symptoms will result on account of the pylorospasm and many a good diagnostician will find at operation that the patient diagnosed gastric ulcer has chronic appendicitis.

Remembering that in gastric ulcer the irritant is above the pylorus and, with varying locations and depths, comparatively near the pylorus, one would expect a somewhat different symptomatology, for in gastric ulcer the organ itself is primarily affected. From a reflex, and that from an irritant so far distant as the appendix, one would expect some variation, especially in the matter of intensity; nevertheless, case after case shows that a chronic appendicitis may give every symptom of an ulcer even as to the pain, melena, and hyperacidity. Graham makes this statement in differentiation: "Appendicitis gives a gastric history or gastric symptoms, but not an ulcer syndrome." And again, "with varying spells of short (three days) irregular food distress or pain, no appetite, even with gas, belching and vomiting, and good acid content, look out for appendicitis." The wearying discomfort, the lack of relief from food and alkalis, the tenderness over McBurney's point—the tenderness may be absent—lack of the afterfood symptomatology of ulcer, point to appendicitis. Rovsing's procedure of forcing air into the colon towards the ileocecal valve, producing pain or more pain in the appendix area if affected, may be helpful. The fact for us to remember is that appendicitis may give every symptom of ulcer even to epigastric pain, hemorrhage and melena, and an important clue may be the registering of the fact that the patient has a distinct recollection of an attack from which he dates his subsequent stomach irregularity.

2. *Gall Bladder Disease.*—The irritant here is within the gallbladder, in the wall in case of infection, or a peri-cholecystitis due to perforation and attachment to the duodenum. It is closely connected therefore with the gastro-intestinal tract. Its pathology will cause a reflex pylorospasm, and as a result reproduce the symptomatology of intra-gastric disease. But being below the pylorus, and not within the tract as are the others, it will in a high percentage of cases create a symptomatology of its own.

In gall bladder disease more females than males are affected and middle age most often; in recollection of the first attack, the pain was sudden and very often severe, with subsequent soreness over the area; the attack is of short duration and may come on during a meal, an hour afterwards or after a big meal. The character of the pain is lancinating and may be almost intolerable, with shock, chill, distension, sweats, catch in breath, diaphrag-

matic spasm, the spell lasting from an hour to a few days. Usually nausea and vomiting and sometimes acidity and heart-burn are present; pain on pressure over the gall bladder or liver with gasping inspiration on deep pressure are also elicited. The pain is referred from the right costal margin into the back, beneath the right scapular angle (cystic duct pain), and there is tenderness on pressure over the twelfth dorsal vertebra. Food offers no relief as in ulcer, nor does soda; food is repugnant. "Pain at night the same as during day, symptoms vary as to character each day, not replica of day before; spells come on any hour and unannounced without reference to season. If obstruction in common duct there is the clay colored stool and the dark urine." (Lemon⁵.) The "strawberry" gall-bladder often gives an ulcer syndrome—remittency, gas, hyperacidity, distension.

3. *Carcinoma*.—Early cancer disease tests the diagnostic skill of the most experienced. A high percentage of cancers form on an ulcer base, and the transition may be so gradual as to make no real change in the clinical picture. There is pain with food and it continues until the stomach is empty. The first symptom may be that of obstruction with a palpable mass. The outstanding facts that strike the clinician are: weakness, anemia and cachexia; loss of weight, tender pressure point, loss of subcutaneous fat, the presence of palpable glands showing metastases; liver enlargement together with signs of obstruction by vomiting sour grumous food; and the location of pain in a definite area, always in the epigastrium.

4. *Gastric Syphilis*.—Eusterman⁶ says: "Remember the possibility of gastric syphilis should be considered in atypical cases where there are benign gastric symptoms with a syphilitic history, with marked loss of weight without cachexia. A consistent achylia seems almost exclusively characteristic of luetic gastric disease."

5. *Gastropnoia*.—This condition will produce the weary, tired, worried appearance characteristic of gastric ulcer; there is constipation as in ulcer, gas, eructations, distension. There is pain in the cardia, suggesting ulcer in that region. There is quantitative dyspepsia (Rovsing⁴). But the cardalgia here is due to the fact that when food is taken, especially in large quantities, the stomach weight produces traction on the cardia, giving pain. The posture is suggestive. These patients put on suit-

able diet and confined to bed will tell you that they feel better—the change being due to the organs resuming their normal condition and hence no traction—but as soon as they get up the organs pro-lapse and the same trouble is again experienced.

Here then is the situation: 26,000 people die from cancer of the stomach each year and statistics show that 60 per cent, and some places it is as high as 70 per cent, develop on an ulcer base. Only 1 per cent are without pain. In the penetrating type—and that constitutes 10 per cent—there is pain all the time even at night; 25 per cent have acute hemorrhage; 27 per cent have perforation, either acute or chronic. The mortality in acute perforation is 35 per cent with operation. Welch, as quoted by Kennedy, claims 5 per cent of the population have gastric ulcer in one form or another, and Will Mayo holds there are three times as many duodenal as gastric ulcers. A contemplation of such a condition should cause us to wake up to the enormity of it all, what it means in terms of physical and economic suffering, not to mention the fearful mortality directly or indirectly resultant from this disease. In view of these startling facts, I present a plea for an early diagnosis, that advanced and terminal results may be prevented—inanition, hemorrhage, perforation and cancerous degeneration. Knowing these possibilities, let us stop writing prescriptions to patients who come to us saying they do not want an examination, just something for stomach trouble. Tell them that the age of the shotgun-prescription doctor has long since passed with the backwoodsman and the buffalo. Make the diagnosis first and early; advise him on focal infections; let him know he has an ulcer, a potential cancer in 60 per cent of the cases, and secure for him the treatment at once that rational scientific medicine indicates and blaze the way towards the termination of this holocaust, before which the tragedies and heartaches of war pale into insignificance.

CONCLUSIONS

1. The stomach is the mirror of the gastrointestinal tract. By virtue of its being a sack in which food is temporarily arrested for digestion, involving time, chemical changes, motility and rhythm for its completion, any disturbance of any one of these conditions causes symptoms of which gastric ulcer is only a type. Pylorospasm may cause every symptom enumerated and the cause

of the pylorospasm may be an ulcer, gastric or duodenal, the gallbladder, appendix, pancreas, and kidneys, etc.

2. There is a well defined syndrome to cover approximately 60 per cent of duodenal ulcers.

3. There is a fairly well defined syndrome to cover approximately 56 per cent of gastric ulcers.

4. Variability in the remaining cases (surely a large percentage) which are later proven to be ulcer but where a definite diagnosis could not be made is due to acidity, location of ulcer, to variation in motility, spasm, perforation, penetration, to accompanying extragastric disease such as gallbladder infection, appendicitis, or the existence of other primary disease. An ulcer of the stomach with a cholecystitis will naturally give a different symptomatology from a simple ulcer.

5. Extragastric disease such as cholecystitis, cholelithiasis and appendicitis may give ulcer symptoms indistinguishable from an ulcer. So may gastric syphilis, gastric carcinoma, pancreatitis, etc.

6. Psychoses, toxemias, neuroses, endocrine unbalance, gastropotosis have gastric symptoms similar to ulcer.

7. I plead in the final number of my conclusions for the patient who has the distress and the burden to bear for a square deal from every physician in the way of a thorough, exhaustive examination by every instrumentation that may throw light upon his case—laboratory, roentgen ray, duodenal content study, every agency possible; but that those who cannot give him the more refined agencies of precision should so perfect themselves in the other methods as to make the highest percentage of correct diagnoses possible.

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DISCUSSION

DR. E. L. TUOHY, Duluth: The title of this paper has been followed very well by the essayist: "The Clinical Diagnosis of Gastric and Duodenal Ulcer." I do not know that his paper is intended as a plea for the establishing of the diagnosis on the basis of an assemblage of a series of symptoms and findings producing a syndrome. If that is his intention, it would seem to me that he has brought this out very clearly. Yet it is evident from his own figures that a varying percentage of forty to fifty or sixty are not accurately uncovered in this manner. I grant you that it is difficult to have always accessible in all regions the best fluoroscopic or roentgen technique, and yet it is quite apparent that Moynihan was all wrong in teaching that duodenal ulcer could easily be diagnosed by a recital of the symptoms over the telephone. Long ago he withdrew from that stand. In this connection, I mention specifically the roentgen ray, because this probably should be classified as a laboratory procedure. However, it is only an elaborate extension of inspection. A pitting of one method of diagnosis over and against another does not bring out the fundamentals. A good military observer can survey the landscape and see more than an ordinary person using a high power field glass; yet, such a field glass greatly aids the trained military man.

In proper gastric and duodenal diagnosis, it is quite proper and necessary that we secure convincing negative evidence at the same time that we develop the positive, because, as the essayist points out, there is much overlapping of symptoms, and many complaints are not based on regional pathology at all. I am not sure that I have made myself clear: the syndrome basis for diagnosis is splendid and particularly satisfactory in "the typical case"; but certainly such effective laboratory aid as our present roentgen procedures must be developed co-ordinately, and become a part of our *clinical* armamentarium.

DR. O. J. HAGEN, Moorhead (closing): I wish to re-emphasize the importance of the history as the foundation of the diagnosis and thorough scientific procedure in getting at the basis for pathology and the symptomatology. I also wish to emphasize the fact that in ulcer as well as in extra-gastric disease there is a reflex present and that the pylorospasm is probably the reflex which causes the symptoms which are similar in both gastric and extra-gastric diseases—connected up as all are through the nervous system with the stomach, the stomach being the mirror which gives us the clue that there is some disturbance in the gastro-intestinal tract. That is the reason that in gallbladder and appendicitis there are present in many instances all of the symptoms of an ulcer. I wish to remake a plea for the early diagnosis of all these symptoms in order to prevent the carcinoma that develops in practically 50 per cent of all cases.

TREATMENT OF DUODENAL ULCER*

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The substance of this paper is derived from the study of results in patients with duodenal ulcer who have been under my observation more or less continuously for from six to nine years.

While a surgical check-up is essential to a positive diagnosis of duodenal ulcer, the diagnosis of cases here considered is based on findings which will be acceptable to those familiar with this condition, and the element of error in diagnosis is, I believe, about that of any worker who has checked himself carefully by surgical findings when available.

The principal point of interest in this paper is the result of the intensive study of duodenal ulcer patients who came under my observation six to nine years ago, which allows sufficient elapsed time to determine to a great extent what can be expected from such management as they received.

While the basis of my conclusions are derived from the results in patients of these former years, I have been gathering cumulative evidence up to the present time by testing the use of such measures as were then instituted.

In order to approach the conclusions I have reached, in an orderly manner, we will have to start with the two fundamental principles involved.

1. Establishment of a correct diagnosis. This will have to be accepted in this series, allowing for the usual percentage of errors.

2. Establishment of the most reasonable form of treatment to get the best results with the least interference with the patient's comfort and earning capacity.

In determining the most reasonable form of treatment for each case we must first classify as dietary or surgical, this classification depending on the physical, mental and economic status of the patient. Patients with pyloric stenosis due to scar tissue and those with concomitant lesions, as definite cholecystitis or appendicitis, are immediately classified as surgical unless otherwise contraindicated, the last two mentioned not necessarily needing gastric surgical intervention.

Just as important as the classification on physical grounds is that from mental or temperamental and economic reasons, as it is absolutely essential in attempting to obtain permanent results from dietary management to have the complete co-operation of the patient. Those without sufficient intelligence to understand their rôle are not successful management cases. It must be admitted that they are also very poor patients for the surgeon, and it is a case of "passing the buck." Life is too short to attempt to control the occasional "blockhead," but I believe their best chance lies in surgery, as they are under control for at least two or three weeks following operation.

The economic or social status of the patient is of the highest importance in choosing the right way to handle his case. Consider the situation of the laboring man. In the first place he must necessarily have a large quantity of cheap food, which is contraindicated both by its bulk and roughage content. Secondly, he is usually living from hand to mouth, probably with a family to support. Can he afford to gamble four to eight weeks of his time with attendant costs against the rather slim probability that he may remain symptom-free after going back to physical labor and diet requirements?

All patients of sedentary occupations or those doing light manual work, unless they are classified as surgical under preceding paragraphs, are eligible to a careful try-out on dietary management. Dietary management represents the first line defense and only a small percentage of patients if properly guided will get through to the second line, which is represented by surgery.

It is not surprising that the surgeon is inclined to consider a large number of duodenal ulcer patients as surgical, as most of the patients he sees are those who have failed to obtain permanent relief on the first line due either to poor management or to the fact that there are patients who will not remain symptom-free on good management. He does not see the large number of patients who are held symptom-free on the first line.

There is also a considerable class of patients not seen by either the first or second line, that is, those who have obtained a so-called spontaneous cure.

In instituting management for the class of patients considered eligible, my plan has been greatly influenced by the subsequent history of the patients whose regimen was initiated six to nine years ago. In those years I had control of one hundred and

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twenty-three patients with duodenal ulcer, a large number of whom were economically unable to have private hospital treatment. In attempting to do something to at least give them temporary relief a modification of the Sippy management was worked out and very satisfactory preliminary results were obtained. At the same time other patients who could afford it were treated by the orthodox Sippy method.

As time went on in checking over results, much to my surprise I discovered as high a percentage of my ambulatory patients were remaining symptom-free as among those started on absolute rest. This held true with patients exhibiting severe as well as those with mild symptoms. The severity of symptoms aside from hemorrhage does not necessarily contraindicate ambulatory management.

Of one hundred and twenty-three patients with duodenal ulcer whose management was instituted six to nine years ago I have under observation or reports from seventy-eight. Of forty-two patients entirely on ambulatory management thirty have remained inactivated to date, a period of six to nine years, and are leading normal lives, but are supposed to be observing a few dietary restrictions. Twelve of the forty-two patients have had a recurrence of symptoms. Of twenty-four patients started on hospital or rest treatment, seventeen have remained inactivated and seven have had recurrence of symptoms. Twelve of the seventy-eight patients still under observation had surgical treatment, four of whom have had some recurrence of symptoms and have been more or less on dietary management.

In reviewing the results in these seventy-eight cases the relative number of those remaining symptom-free from each of the three groups, ambulatory, rest and surgical, is approximately the same—close to two-thirds.

In following up several hundred of more recent years we have found about the same results, but expect a larger relative number to remain symptom-free on management, as the management has been improved and the selection of patients more closely considered. I do not wish to include results on these later cases as there has not been a sufficient time elapsed.

The study on this series of cases was done originally for the purpose of determining if possible

the cause of our failures, which we believe to be as follows:

1. Improper selection of cases from mental or temperamental point of view.
2. Improper selection of cases as to social or economic status.
3. Insufficient control of patients.
4. Pathology which was subsequently discovered in other organs, as gallbladder or appendix of sufficient severity to give trouble.
5. Army diet, activities and exposure in several drafted patients.
6. Where others shared in the control of the patient.

While the study of this series of cases helped materially in avoiding some further failures, the one most impressive fact gained was that the ambulatory patients did as well as the rest patients.

When one considers the fact that we are dealing with an ulcer in the wall of a hollow viscus which is sustained by intra-abdominal pressure and is in more or less constant peristaltic motion regardless of whether the individual is resting or moving, it does not seem essential that the individual be kept at rest. There is no similarity to ulcers located in other tissues, as for instance, varicose ulcers of the leg which are influenced by hydrostatics and voluntary muscular activity and where rest is clearly indicated.

This paper so far has indicated only a basis for the management of duodenal ulcer patients and that basis we believe should be ambulatory management unless clearly contraindicated. Each patient is a problem in himself and must be studied as to the selection of proper diet, quantity and timing of feedings, and use of alkalies.

Our basic ambulatory management is a modification of the Sippy diet; a milk and cream mixture with alkalies half way between feedings. The quantity and timing of the feedings are dependent on the nutritional requirements of the individual and the time of onset of pain after eating.

Four ounces of equal parts of milk and cream every two hours with a half teaspoonful of alkalies on intervening hours is the most common starting point. We never start on a longer feeding interval and shorten quantity and time down to as low as one ounce every half hour if indicated, the half hour feeding being used only where alkalies are contraindicated as in alkalosis.

Our experience is that the two hour schedule will control distress in a large percentage of cases.

We have also discovered that all patients do not take kindly to a milk and cream diet and occasionally have to replace with one consisting of such articles as cereals, starches, gelatin, rice, cooked eggs, etc., and even the Lenhartz diet, the timing and quantity being the same as in the milk and cream diet.

We expect a five to seven pound weight loss in the first ten days, but do not allow this loss to exceed 5 per cent of the body weight and the patient is brought up to normal food requirements as soon as possible.

After three or four days of the base diet a choice of one of the following items is added daily until four additional feedings are on the schedule. These feedings are limited in quantity to one ordinary coffee cup full and are given with one of the original feedings, this extra nourishment coming every four hours. Our list of items to select from includes custard, cream of wheat, farina, cornstarch pudding, tapioca, malted milk, cream soups without meat stock (except tomato), soft eggs, egg-nog and other similar articles. The alkalies are given between feedings usually in half teaspoonful doses and are those ordinarily employed, consisting of a mixture of equal parts of soda bicarbonate and calcined magnesia (marked, laxative), and a second mixture of equal parts of soda bicarbonate and bismuth subcarbonate (marked, constipating). The patient is instructed to use the powder indicated by the bowel condition and soon becomes expert on keeping the bowels properly regulated.

We expect to obtain complete relief of symptoms within twenty-four hours and if the plan first tried does not accomplish this the quantity, timing, type of diet and alkalies are changed until such results are obtained and maintained.

The patient, after close supervision for the first three or four weeks, reports once a week and new items of diet are added for variety and the quantity is gradually increased.

The timing of feedings is lengthened if all has gone well for seven or eight weeks and the patient is given a small amount of several items three times a day at meal times. The milk and cream is continued at meal times and half way between and the intermediate feeding is kept up for several years. The alkalies are continued for a period of from three to six months.

We insist on complete control of the diet and activities of the patient for the first year and a more general supervision from that time on, requiring the patient to report twice yearly. They are warned to be particularly careful during the seasonal periods of attacks, which are more often spring and fall.

Many patients give a history of marked regularity in attacks and others are very irregular, sometimes going years without symptoms. We give patients who have been having attacks with fairly definite regularity very close attention over a period of time that would include three or four attacks.

As before stated the management of duodenal ulcer patients must be based on the study of the individual and I have attempted to give only in a very general way the methods we have found most successful.

Conclusions.—There are undoubtedly many so called spontaneous cures.

Supervision covering a period of years is essential.

If a patient remains symptom-free over a period of time during which according to his history he would ordinarily have three or four attacks, the chances of permanent success are very good. However, we believe that five years or more of freedom from symptoms should be required to place these patients in the cured class.

The older literature on this subject is of little value except to show that many different diets and procedures have had their successes and failures.

I believe every duodenal ulcer patient, unless contraindicated on grounds mentioned in the body of this paper, should be given a "try-out" on ambulatory management. If satisfactory results are not obtained the patient has lost very little in risk, time or money.

I am thoroughly in accord with this statement made by Bevan* in a recent article that "the price of permanent cure is eternal vigilance, whether medical or surgical."

*Bevan: Jour. Am. Med. Assn., i, 1922.

DISCUSSION

DR. J. P. SCHNEIDER, Minneapolis: These remarks will be based entirely on the work of the Out-Patient Clinic of the University. Dr. Willson's paper is interesting because it brings out the application of the ambulatory treatment and its value in private practice. In 1914 when we reorganized the Medical Department of the Out-Patient Service and established a Department of Gastro-Enterology, we began to accumulate a large series of patients with duodenal ulcers. We were presented with a problem. These cases

began to accumulate until there were about five hundred a year. The amount of room available in the University Hospital for the acceptable method of treatment, putting the patient to bed and giving the regulation Sippy treatments for six or eight weeks, made this utterly impossible. In the second place, many of these patients were unwilling or unable for financial reasons to do this. They had to work even if only part time to keep up their earning capacity. Contrary to European experience, our American dispensary patients would not—unless grave complications threatened—consent to routine gastro-enterostomy. We were thus forced to evolve the ambulatory method of treatment of these patients. This treatment had to be simple because many of these patients were of medium intelligence and frequently social workers had to visit the homes and teach them to prepare this simple but suitable diet.

We gave seven feedings a day to begin with and five later on. Five is becoming the standard, more or less, interspersing these with alkalis. In the use of the latter, we soon discovered that certain of the magnesia preparations contained as high as 2 per cent calcium chloride and we had to determine definitely the preparations containing a minimum amount of this irritant. We were astonished, to say the least, to find that these patients did very well. They would get symptom-free in a few days and would go on frequently to uninterrupted arrest of their symptoms. Many of these patients were seen over several years. In the first place, we learned to select young, not old, cases. In the second place, if the patient had many hemorrhages, surgical treatment was advised. Third, if the roentgen study showed much involvement of the gastric or duodenal wall indicating sclerosis, they were not considered suitable for medical treatment. Fourth, if the patient had a large gastric residue and daily lavage for a week did not bring about normal emptying, they were not considered suitable cases for medical treatment. We also were impressed with the fact of the necessity for a complete survey of the mouth, teeth, nose and naso-pharynx and the necessity for proper treatment in order to secure permanent results.

The important thing that we learned from many experiences was that before proceeding to treat a patient with duodenal ulcer it was necessary that all other abdominal disease be thoroughly ruled out, this applying particularly to gallbladder disease and recurring appendicitis.

DR. HUGH WILLSON, Minneapolis (closing): The experience of Dr. Schneider in the out-patient clinic of the University is parallel with my own with this exception, that in private practice we can keep in closer and longer contact with our patients. Dr. Schneider and I have discussed this type of management several times and are in accord on all of the main points.

The points that I have been particularly anxious to drive home are these, that both from the viewpoint of results and economics it would seem no more than fair to give all patients with duodenal ulcer, where not especially contraindicated, a thorough "try-out" on ambulatory management. From personal experience I expect as large a proportion of these patients to remain symptom-free as those treated by other types of management.

THE USE OF RADIUM IN THE TREATMENT OF BENIGN HYPERTROPHY OF THE PROSTATE

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In the Journal of the American Medical Association of November 11, 1916, Barringer reported a case of carcinoma of the prostate treated for six months by radium with marked diminution in the size of the growth and improvement in the symptoms. The radium was introduced under local anesthesia in the form of a needle through the perineum directly into the substance of the prostate. So far as I have been able to determine, this is the first report of the use of radium in this manner for prostatic disease of any kind, although H. Schueller, in the Wiener Klinische Wochenschrift of February 5, 1914, had reported the use of radium in a number of urologic cases, including papilloma and carcinoma of the bladder, carcinoma of the prostate, and simple hypertrophy of the prostate. His treatments, however, had been by irradiation through the overlying tissues by way of the urethra, the rectum, or the perineum. The results in the prostatic cases, with a single exception, were negligible.

In the Annals of Surgery for May, 1917, Hugh Young published a paper entitled, "The Use of Radium and the Punch Operation in Desperate Cases of Enlarged Prostate." In this paper he gave *in extenso* the report of a case entering the hospital with 1300 c.c. of residual urine and with kidneys and heart in such condition that radical operation was out of the question. After eight months of treatment, including two massive doses of radium applied from front and back, and, of course, well screened, and five intraurethral treatments, as well as five fulgurations to the middle and lateral lobes, the patient still had complete retention although the prostate had been reduced nearly to normal size and the general condition had greatly improved as a result of the constant use of the catheter. The cure of the obstruction was then completed by means of the punch operation. Young states that at the time of this report several other cases had been similarly relieved but that each had required the punch operation to complete the cure of the obstruction, and concludes that

*Presented before the Minnesota Academy, November 8, 1922.

radium alone is not a cure for prostatic hypertrophy.

The first case in which radium was used by the Barringer method was a man seventy-two years of age, who, when first seen for his present trouble, had been suffering from incontinence of urine for three weeks. Examination disclosed a bladder distended nearly to the umbilicus, and a prostate much enlarged, hard and coarsely nodular, and firmly fixed in the pubic arch. A clinical diagnosis of carcinoma of the prostate was made. The retention was relieved by a hard catheter and, shortly after, a suprapubic cystotomy was done with the sole idea of possibly being able to palliate the condition by the use of radium. On opening the bladder the prostate was found to be greatly enlarged, and the obstruction to be due to a middle lobe about 1.5 cm. in diameter. The prostate presented the same hard, nodular and fixed condition that it did upon rectal examination and the futility of attempting removal seemed confirmed. Fifty mg. of radium on four needles were accordingly imbedded in the obstructing lobe, and the shanks allowed to protrude with the drainage tube from the supra-pubic wound. The radium was left for twenty-two hours, the dose thus amounting to 1,100 milligram-hours. The event proved that this was too large a dose in so small an area, since an abscess gradually developed which, after ten or twelve days, discharged near the root of the penis. No harm was done, however, and there has been no further interference with urination. The supra-pubic wound closed and the improvement was so much greater than we had dared hope for that about six weeks later 25 mg. of radium on two needles were inserted under novocaine by Barringer's method through the perineum into the right lobe of the prostate. It was allowed to remain sixteen hours, the dose thus being 400 milligram-hours. There were no unpleasant sequelæ to this treatment and six months later the left lobe received a similar treatment without pain or inconvenience on the part of the patient. The third treatment was given about two months ago. The prostate is greatly reduced in size and has not the same feeling of hardness nor of fixation. There is still frequency of urination and pus cells are seen under the microscope. There is a residual of 60 c.c. and it is evident that the obstruction is not entirely removed, but the improvement has exceeded our greatest hopes at the start. No tissue was

removed for microscopic examination at the time of the cystotomy and the clinical diagnosis of carcinoma remains unconfirmed. The reduction in the size of the prostate was so striking in this case it was decided to try the effects of radium in benign hypertrophy.

The second case was that of a man seventy-two years of age on whom I had done what I believed to be a complete enucleation of the prostate five years before. He had been perfectly well until the first of the year, when he noted blood in the urine. This occurred frequently until about the first of March, when he reported for examination. On rectal palpation one had difficulty in believing the prostate had ever been removed, and, on account of the bleeding, fear of carcinoma developing from the capsule was entertained, although the gland did not have a very suspicious feel. There were 75 c.c. of residual urine and cystoscopic examination showed a rather irregular and ragged prostatic urethra and a red and granular appearance in spots. No growth other than that of the prostate was seen. Twenty-five mg. of radium were inserted into the left lobe through the perineum and allowed to remain twelve hours. Five months later the right lobe was similarly treated, a small amount of blood having been seen again. This was three months ago and the patient writes he is perfectly well and comfortable and voiding normally, and that there has been no recurrence of the bleeding.

Case 3 is sixty-six years of age. Six years ago he had an acute retention with dribbling of bloody urine, and again two years ago. On each occasion he was relieved after the passage of a catheter two or three times, and able to resume his work. A week before he was seen, a similar attack occurred but without relief from catheterization and he was sent to the hospital with a retention catheter in place. Examination showed a typical, marked prostatic hypertrophy. The retention catheter was removed the day following admission and the patient catheterized every four hours, although he was able to empty the bladder. After three days 12.5 mg. of radium were introduced into each lobe of the prostate through the perineum under local anesthesia and allowed to remain ten hours. He left the hospital five days after the operation, declaring he was perfectly well, able to void easily, and having no residual urine. In these few days the prostate, as judged by rectal examination, appeared to have been reduced to about two-thirds its origi-

nal size. This patient at present has been lost sight of.

Case 4, aged sixty years, operated upon five years ago because of enlargement of prostate with residual urine. This proved to be a most difficult case, the prostatic tissue being apparently fibrous in character. A part only was finally removed with damage to the bladder attachments and a stormy convalescence marked by infection in the wound and a left femoral phlebitis. Three months later the supra-pubic wound was repaired, a fistula having opened. No further symptoms until August of this year, when a rather smart hemorrhage occurred, following a long automobile drive. Since then pain and frequency. Residual urine 30 c.c.; cystoscopic examination showed much distortion of the prostatic urethra resulting from the operation and a definite cystitis with three very small calculi.

On September 11th, 25 mg. of radium were introduced through the perineum into the prostate and by mistake allowed to remain only six hours. In this case a chill occurred in the evening of the day of treatment, followed by a temperature of 103.4. This had dropped to normal the next day and he left the hospital. Since then there has been no return of the bleeding or frequency and the patient is reported as much improved in every way. There has been no opportunity to examine the prostate or determine whether or not there is now any residual urine.

Case 5, age seventy-six years. For six months this man had had nocturia increasing gradually in frequency to five or six times. For a week there had been painful urination. The prostate was diffusely enlarged. Residual of 150 c.c., cloudy, blood-tinged, foul-smelling urine. Twenty-five mg. of radium introduced by the perineal route into the left lobe of the prostate and allowed to remain six hours, a dose of 150 milligram-hours. Five days later the residual urine was 25 c.c. There were no red blood cells but many pus cells. Hemorrhoids were done in this case in addition to the radium treatment, caudal anesthesia, 2 per cent novocain, being employed. On discharge the left lobe showed appreciable reduction in size. Since the above was written this man has had a second treatment in the other lobe. A temperature of 107 followed but subsided in a few days. His residual is now 25 c.c.

Case 6, seventy-nine years of age. Patient began

catheterizing himself in 1917. In 1918 he had an operation for abscess of the left kidney—probably an infected hydronephrosis; simple drainage was done. One week before entering the hospital he had a severe chill followed by fever and when admitted was in a drowsy condition. There was a moderate enlargement of the prostate and his inability to empty the bladder appeared to be due, in part at least, to lack of muscular power, since the sphincter muscles of the anus also were completely relaxed and there was incontinence of feces as well as of urine. However, there was great difficulty in introducing the catheter. Radium was used in the hope that this might be made easier, and perhaps the painful spasms accompanying urination ameliorated. A needle carrying 12.5 mg. of radium was introduced through the perineum into each lateral lobe on September 28th and allowed to remain eight hours. There was no discomfort attending the first treatment but with the second there was pain and it was impossible to pass the catheter, the difficulty being due to the fact that one of the needles projected into the prostatic urethra. Both troubles disappeared when the needles were removed. In this case the residual urine, from 200 to 300 c.c., remains about the same as before treatment, but all difficulty and discomfort accompanying the passage of the catheter have disappeared, as have also, except once each evening, the painful spasms which before were so annoying. As before, the patient is only able to void when lying on the back in bed, and this ability appears to result rather from relaxation of the sphincters than from action of the detrusors. His bladder capacity is about 700 c.c. and it seems fair to assume that the detrusor muscles lie splinted in the thickened bladder wall resulting from the chronic catheter cystitis and old suppurating kidney. Before the radium treatments he complained of a sensation as of a foreign body in the rectum and inability to empty it by his own volition. This sensation is gone now, bowel movements are controlled and there is definite tone in the anal sphincters. Just why this latter condition should have resulted I am at a loss to determine, since the prostate was not tremendously enlarged to begin with and only moderately reduced in size by the radiation. His general condition has been thought not to warrant cystoscopic examination, and much pathology apparently will remain, however much the prostate may be reduced in size. The net result, or sequence, of the radium

treatment has been a very definite and decided increase in comfort.

This report is concerned with cases both incomplete and too recent to be anything more than preliminary in character and that is all that is intended. However, the results seem to warrant a continuance of effort along this line and the hope that others may feel inclined toward trying it out and aiding in the perfection of the technique, and this must be achieved before the possibilities can be determined and a final judgment arrived at.

In any event the work thus far done shows that a very decided reduction in the mass of prostatic tissue can be obtained by the use of radium imbedded in its substance, and the great advantage of using it in this manner over those in which the rays must act at a distance through the skin or mucous surfaces is apparent. Moreover, radium is very irritating to mucous surfaces, and when so used must be carefully screened and so deprived of much of its effect. Whether or not the prostate can be indefinitely shrunk by repeated treatments remains to be determined, but certainly much can be done; the decrease in size and the relative increase in fibrous tissue are very apparent when the radium needle is introduced into a lobe that has had a previous treatment.

The technic is extremely simple. With the patient in the lithotomy position, under local anesthesia, a single wheal is made in the skin of the perineum midway between the anus and the scrotum. Using the finger as a guide in the rectum the tissues between the skin and the anterior surfaces of the two lobes of the prostate are then infiltrated, and an incision 0.5 cm. long made through the skin. The needles are then passed along the infiltrated tract into the substance of the prostate. In our first treatments we used also a catheter in the urethra. The avoidance of this tract is probably not important as compared with the rectum, but if entered it should be by intent and not by chance. For it seems quite possible that large middle lobes may be more efficiently radiated if the needles, after traversing the lateral lobes, are made to enter the prostatic urethra, and are then pushed on into the large median mass. From our limited experience there appears to be little doubt but that the lateral lobes of the hypertrophied prostate can be reduced in size as much as required. The median lobe is less easily reached, unless by the transurethral route just suggested, or perhaps by entering the

radium needles, not in the mid-line of the perineum, but a centimeter or two on either side, thus causing them to traverse the lateral lobes slightly diagonally and to meet at an acute angle in the middle lobe. We have considered also the possibility of placing them through the cystoscope.

In the matter of dosage, it is evident that in the first case treated it was too large for so small an area. The aim would appear to be to use the largest dose possible without making an actual slough and so causing abscess formation. The case reports show that at least 300 or 400 milligram-hours may be given a single lobe at one sitting, and very possibly this could be increased considerably. In this case it would seem better to use 25 mg. in each lobe at different sessions than half that in each lobe at the same time. Because of the shrinking and formation of fibrous tissue it is best to introduce the needles first into the deepest portion of the gland; and of course this is most often the site of the obstruction.

The six patients have had a total of eleven treatments. The placing of the needles has been practically painless and there has been almost no discomfort afterward except in the three instances noted—in one the presence of a needle in the prostatic urethra was responsible, and in the others a chill with high fever followed in about five hours, but had entirely disappeared in one the next morning, and in the other after a few days. It reminded one of the so-called urethral fever, and possibly a needle may have entered the prostatic urethra in these cases also. However, the case in which it is known to have done so had no febrile reaction.

The meager data here presented are chiefly suggestive, and yet appear to offer a reasonable hope that benign prostatic hypertrophy may yet be relieved of much of its gravity. The operation of prostatectomy is one which is undertaken by the patient with great reluctance, both on account of the very considerable discomforts attending his preparation for it and his convalescence from it, and on account of the dangers of the operation itself. Men who are called upon to undergo this operation are quite generally poor surgical risks. Most of them are well advanced in years, and long continued back pressure upon the kidneys, with its resultant pathology, both local and remote, has greatly lowered their resistive powers. Because of their dread of the operation, relief is usually not sought until conditions are really serious. I be-

lieve there is very fair ground for the hope that the perfection of the radium treatment here outlined, possibly followed in large middle lobe cases by Young's simple punch operation, may eventually rob this condition of most of its terrors.

DISEASES WHICH MAY BE ASSOCIATED WITH PERNICIOUS ANEMIA*

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Little doubt exists in the minds of experienced clinicians that occasionally some disease other than pernicious anemia may present a blood picture which cannot be positively differentiated from it. There is, on the other hand, considerable doubt whether other diseases ever produce the complete clinical and laboratory syndrome of pernicious anemia; the blood picture may be that of pernicious anemia while the history of pernicious anemia, glossitis, paresthesias, diarrhea, and the physical and laboratory findings, achlorhydria, demonstrable cord changes, and high pigment values in the duodenal contents, are wholly or partially absent. This review of pernicious anemia as it occurs in association with other diseases has been undertaken to throw some light on this question.

From January 1, 1917, to January 1, 1922, 628 patients with pernicious anemia have been observed. In 108 of these other diseases were also present. I shall discuss only certain aspects of the more important groups of these associated diseases.

SYPHILIS

There seems to be no doubt that pernicious anemia occurs in association with syphilis, but that this association occurs often enough to indicate a causative relationship of syphilis seems to be doubtful. Only occasionally has a case been reported in which the diagnosis of syphilis is clear and the characteristics of pernicious anemia are definite. One would expect to see this coincidental association of the diseases in a small number of cases. Moreover pernicious anemia may show a

positive Wassermann reaction when a diagnosis of coincidental syphilis can not be made. Foucar and Stokes have reported the experience of the Mayo Clinic on this question. In a series of 4,800 patients with syphilis, twenty-five cases of severe anemia were found (hemoglobin 55 per cent or less). Of these twenty-five cases, thirteen showed a satisfactory or fairly satisfactory clinical picture of pernicious anemia. Of the thirteen, however, six gave no other evidence than the positive Wassermann reaction and might be said to demonstrate only that a positive Wassermann reaction may occur with pernicious anemia in the absence of other evidence of syphilis. In only five of the thirteen was there indisputable evidence of syphilis, although anemia was the outstanding feature without evidence of syphilitic involvement of other systems. If the proof that pernicious anemia may be due to syphilis depends on cure without remissions by means of treatment for syphilis, none of these cases can be regarded as pernicious anemia, and the conclusion is that pernicious anemia and syphilis are merely concomitant diseases in the same patient, and that pernicious anemia in the absence of syphilis may yield a positive Wassermann reaction.

HEMORRHAGE

That excessive hemorrhage or repeated loss of blood may be a direct cause of pernicious anemia seems very improbable. Excessive menstruation and recurrent loss of blood from hemorrhoids may eventually cause severe anemia of the secondary type, even when the loss of blood at any one time is slight and occasionally not recognized by the patient. Patients with pernicious anemia may date the onset of their definite complaints from the time of an excessive hemorrhage, and recurrent bleeding may confuse the diagnosis when the clinical features of pernicious anemia are not clear. The loss of blood may temporarily modify the blood picture. This is true most frequently with hemorrhoids. There is a group of congenitally anemic patients with a family history of anemia, who in middle age or late in life develop pernicious anemia, occasionally in a somewhat atypical form. In such instances loss of blood seems to be a factor in the development of the pernicious anemia syndrome, yet it cannot be said that there is a direct etiologic relationship. Nine patients with pernicious anemia gave a history of excessive bleeding; six had recurrent bleeding from hemorrhoids; one,

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excessive menstruation; and two, excessive hemorrhage at childbirth.

GALLBLADDER DISEASE

The occurrence of disease of the gallbladder with pernicious anemia is unusual in contrast to hemolytic jaundice, so much so that with evidence of cholelithiasis in a case which is suggestive of pernicious anemia, care should be taken to exclude hemolytic jaundice. However, an occasional instance of cholecystitis and cholelithiasis is found with pernicious anemia. In this series there were ten cases in which the diagnosis of gallbladder disease was substantiated clinically. None of them was operated on. It is probable that mild types of cholecystitis occur more often with pernicious anemia than would be indicated by these data, but give no very clear evidence of the condition on clinical examination.

CHRONIC SEPSIS

It has long been held by certain observers that pernicious anemia is the result of sepsis or chemical toxemia resulting from sepsis. If this is true, the action of the sepsis must antedate the development of symptoms by years. Clearing up the foci may improve the patient's general condition, but we have no evidence that it has any direct effect on the disease. No one can say what might have been the result if the foci had been eliminated five or ten years earlier. The various forms of septic processes have occurred not more commonly with pernicious anemia than would be expected. Aside from dental and tonsillar sepsis fourteen patients in this series were suffering from other septic conditions, including bronchiectasis, pyonephrosis, chronic infectious arthritis, recurring sinusitis, and colitis (nonamebic).

RENAL INSUFFICIENCY AND HYPERTENSION

Evidence of nephritis is not unusual in the series. Christian has pointed out that the renal function, often reduced, as measured by dietary tests, improves with the improvement of the anemia. Seventeen of our patients showed evidence of nephritis in the urine and in functional tests, often associated with myocardial disease and arteriosclerosis. Most of these patients were more than sixty years of age, when the nephritis of arteriosclerosis is common. There is, therefore, no reason to believe that there is necessarily any close relationship between pernicious anemia and nephritis in this group. Nephritis may produce anemia which may be difficult to

differentiate from pernicious anemia, but this is a parenchymatous nephritis occurring in younger persons.

Hypotension is characteristic of most patients with pernicious anemia. The diastolic pressure, as well as the systolic, is distinctly below normal. Four patients of the series, however, showed hypertension, the systolic pressure ranging from 160 to 210, and the diastolic from 82 to 128. It is probable also that in certain cases there has been hypertension before the development of pernicious anemia, the blood pressure dropping to normal, or below, later. The hypotension of pernicious anemia may be due, in part, to some other factor than anemia, inasmuch as the blood pressure rarely returns to normal with an elevation of the blood count.

CARCINOMA

Five cases of pernicious anemia associated with carcinoma occur in the series. Distinctive features of both diseases were present, care having been taken to exclude anemia secondary to cancer. These were cases of cancer of the breast, colon, uterus, esophagus and stomach. The carcinoma of the stomach developed eighteen months after definite indications of pernicious anemia had been recognized. The patient (Case A130149), aged fifty-two years, had pernicious anemia, bleeding hemorrhoids, *Endameba histolytica*, and finally carcinoma of the stomach. Carcinoma does not cause a clear clinical picture of pernicious anemia.

THYROID DISEASE

Adenomas of the thyroid occurred in four instances. In one additional case exophthalmic goiter was present. There was nothing to indicate either an etiologic relationship or a modification of the course of either disease. Hypothyroidism is often associated with moderate anemia which must be distinguished from primary anemia; the distinction is, however, usually not difficult. Two instances occurred in which a diagnosis of both hypothyroidism and pernicious anemia seemed to be justifiable. In both, the cord changes of pernicious anemia were present, the metabolic rate was -17 in one; in the other, -20 .

TUBERCULOSIS

The entire absence of active tuberculosis in association with pernicious anemia is a striking feature in the series. Only three instances of chronic

or healed tuberculosis are recorded, one case of tuberculids, one of chronic phthisis, and one of tuberculous sinus of the hip. Roentgen-ray examinations of the lungs were rarely made and it is, therefore, possible that cases of healed pulmonary tuberculosis have been overlooked. In view of the prevalence of tuberculosis it is likely that the tuberculous patient is not favorable soil for the implantation of pernicious anemia, and conversely that the patient with pernicious anemia is immune to tuberculosis.

DIABETES

Diabetes with polyuria and blood sugar of 0.27 per cent developed in a case in which the symptoms of pernicious anemia antedate those of diabetes. Glycosuria was demonstrated in one other case. Parkinson has reported a case of pernicious anemia terminating in acute diabetes. There is evidence that glycosuria, if not true diabetes, may be secondary to anemia in view of deficient oxygen supply.

INTESTINAL PARASITES

There is a belief, at least in this country, chiefly based on text-book statements, that *dibothriocephalus latus* is a cause of pernicious anemia. It is not generally known, however, that only a very small proportion of sufferers from this disease have any anemia whatever, or any symptoms of a serious nature. Schauman, in his monograph of 1894, was able to collect only thirty-eight cases with severe anemia, in eight of which the color index was less than 1. The blood picture in the remaining cases, however, was quite similar to that of pernicious anemia.

Rosenquist has written an excellent account of twenty cases of bothriocephalus anemia. The average color index was 1.237, the average red cell count 1,339,000, and the average hemoglobin 30.1 per cent. Gastric analysis was made in twelve, only four of which showed achlorhydria, and one of the latter revealed the presence of hydrochloric acid a year later. Diarrhea was common, but there was no paresthesia or incoördination, stomatitis or glossitis. The nervous system was said to be negative in ten cases. There is, however, no record of detailed neurologic studies. In spite of the blood picture which is typical of pernicious anemia, these cases can not be accepted as strictly belonging to the group classified in this country as progressive pernicious anemia, because of the absence of stomatitis and of cord changes, and the rapid return to

normal health. I have been unable to find a case of bothriocephalus anemia, satisfactory in all details for a diagnosis of pernicious anemia; in order to decide this question a more detailed study of the bothriocephalus anemias is necessary by those who observe such cases. The three cases of dibothriocephalus infestation which have come under observation have shown none of the features of pernicious anemia.

Endameba histolytica is not infrequently found in the stools of patients with pernicious anemia. In most such instances it is evident that the parasitic infestation is not associated with the development of the disease. Actual colitis can be demonstrated in only an occasional case, and the diarrhea is usually no more troublesome than in the average patient with pernicious anemia. In this series there were thirteen cases of infestation by *Endameba histolytica* without demonstrable colitis. Occasionally the bowel symptoms were very severe and some of the features of pernicious anemia absent, which made it difficult to determine the exact importance of the parasitic disease in the production of the anemia in a given case. There is, however, no case in our series in which *Endameba histolytica* was considered the cause of the pernicious anemia syndrome.

On the other hand, patients with infestation by *Balantidium coli* in the chronic form have shown many features of pernicious anemia in a majority of instances. Logan has reported our experience with these cases; four patients had the typical clinical picture of pernicious anemia with sore tongue, achlorhydria, and subacute combined sclerosis of the pernicious anemia type. *Balantidium* invades the tissues and has the power of becoming encysted, and it is probably impossible entirely to eliminate it. The infrequent recognition and the characteristics of this invading parasite, together with the frequency of the accompanying features of pernicious anemia, are very striking and possibly most important considerations in the etiology of pernicious anemia.

CONCLUSION

A general survey of this series of cases seems to demonstrate that, while other diseases may produce a blood picture typical of pernicious anemia, the clinical and remaining laboratory features are absent to such a degree that it is doubtful whether the complete pernicious anemia syndrome is ever

seen as a result of other disease. The notable and striking exception to this statement, in our experience, is infestation by *Balantidium coli*, which in the few cases we have seen has always been accompanied by the features of pernicious anemia, glossitis, achlorhydria and subacute combined sclerosis. The absence of active tuberculosis in association with pernicious anemia is a notable feature of the series.

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A VISUAL ALBUMINURIA GUIDE*

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Northwestern National Life Insurance Co.

Minneapolis, Minn.

I am taking the liberty of showing a suggestion for roughly determining the amount of albumin present in a urinary specimen and more especially to offer a comparable and relatively constant nomenclature for varying degrees of albuminuria where exact quantitative tests are not possible or convenient. In life insurance examinations the need for such a method is most imperative, as quantitative estimates are out of the question and as the vague terms in common use, such as trace, moderate amount, etc., vary so with the opinion of the observer and the delicacy of his technique that they have little accurate value. In a large proportion of routine clinical and hospital work, this same difficulty is met with, and this visual guide is offered as an assistance in standardizing our nomenclature in at least approximate relation to definite quantitative amounts.

*Presented before the Minnesota State Medical Association, Minneapolis, October 13, 1922, and before the Medical Directors' Association, Nov. 3, 1922.

The tests selected as standard are the "heat and acid" and Heller's because they are the most widely known and most easily done, and because Heller's especially well lends to quantitative estimates. In our laboratory we use Ulrich's ring modification of the "heat and acid" as the initial test, as it is more delicate than either the "heat and acid" as ordinarily applied, or Heller's, but as it is not so generally known, we have not reproduced it in our chart.

The tests shown in the chart are photographic reproductions of actual tests made with known solutions of albumin from a case of nephritis. Previous attempts to standardize notations of degrees of albuminuria have depended upon verbal descriptions which attempt to measure the width of the albumin ring or picture its density. There is a well recognized relation between the width and density of the cloud and the amount of albumin. But descriptions which depend upon attempts to measure the ring in fractions of an inch or to gauge density by ability to read printing through the cloud, are obviously inaccurate. It is believed that by presenting visually the coagulated albumin as it appears in actual tests, with careful attention to standardizing the method of making the tests, results will be obtained approximately uniform. This has been the experience in our own laboratory and in the laboratories of a number of our examiners who are using the visual chart.

As it is essential that the tests should be made under uniform conditions, these are here detailed:

1. The test tube must be scrupulously clean.
2. The test is to be made at the window in a bright light or with strong artificial light against a black background. A test made at the middle or back of the room, where, in a doctor's office, the sink is frequently placed, and held at that distance towards the window, will only show the larger amounts of albumin.
3. The reading should be made after one minute and within three minutes. Before one minute the smaller traces will not appear with Heller's test, and after three minutes the amount is exaggerated by the gradual spread of the ring upward.

Heat and Acid.—The clean test tube is filled three-quarters full of the filtered urine and 1 c.c. of saturated salt solution added. If neutral or

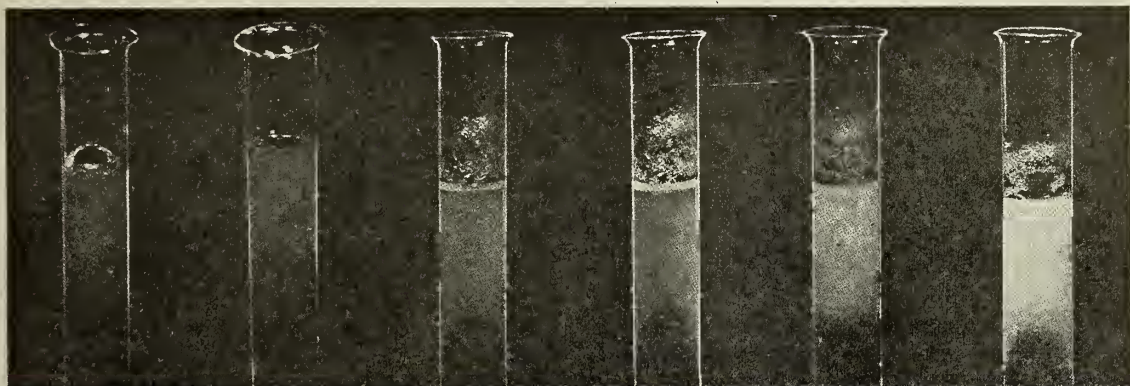
alkaline, it should be acidulated by adding a few drops of 3 per cent acetic acid. The upper portion of the tube, held at the lower end, should be heated until the urine boils. If this is held against a black background in a strong direct light the coagulated albumin will be seen in a cloud of varying thickness depending on the amount present. It can be estimated by comparison with the chart.

an amount greater than 1 part to 1,000, will appear as a coagulated white ring of varying width and density, depending on its concentration. The amount of albumin present will also determine how soon the ring becomes visible. In concentration greater than 1 to 500 the ring appears immediately. faint ring appears in from one-half to one minute. In amounts between 1 to 1,000 and 1 to 500, a very

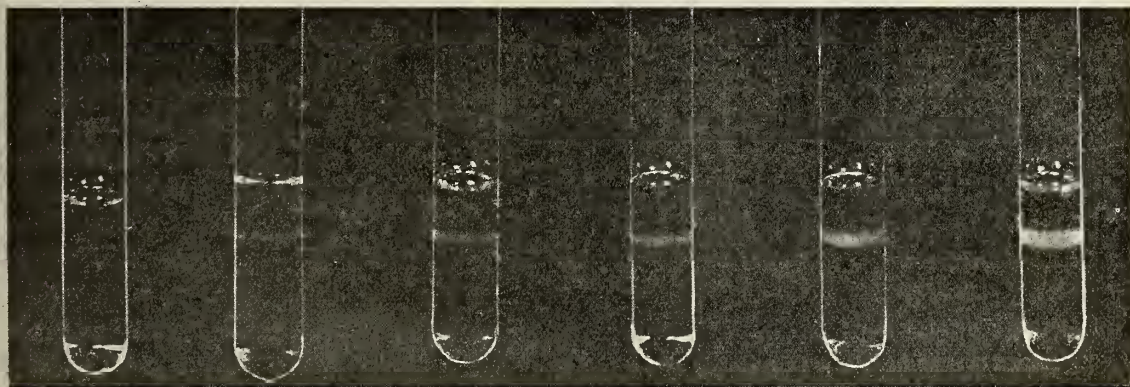
If the examiners and practitioners were supplied

VISUAL ALBUMINURIA GUIDE

HEAT AND ACETIC ACID



HELLER'S



A

.001%

B

.002%

C

.005%

D

.01%

E

.025%

F

.05%

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Heller's.—About an inch of the clean test tube is filled with concentrated nitric acid. The tube is then held in an almost horizontal position and the filtered urine allowed to flow *very slowly* down the tube to overlay the acid. If the urine and acid are mixed so that the ring of contact is not even and distinct the test should be done over.

At the point of contact, albumin, if present in

with such a chart by which they might indicate and standardize their albumin tests, it is believed that a considerable advance would be made in classifying our judgment both as to the amount of albumin present in any individual case and also when different men are using a comparable standard, that the clinical and prognostic significance of varying grades of albuminuria will be better understood.

INJURIES TO THE LOWER BIRTH CANAL*

JAMES R. MANLEY, M.D.,

Duluth

No matter what your attitude may be on the much disputed question as to whether labor is a physiological or a pathological process, I think you will all agree that a good many so-called normal labors result in pathology at a later date. Rectocele, cystocele, scars in the vagina resulting from tears and stretching of the normal supports of the uterus are certainly pathological conditions.

You will also agree that any method or procedure which tends to minimize the frequency of these injuries, or will tend to result in a more perfect repair if they do occur, and which can be used with a high degree of safety to the mother and child, is worthy of consideration and trial.

It is with two methods of protecting the patient from the pathological after-effects of childbirth that this paper has to deal and I maintain that they fulfill the conditions just set forth. What I have to say applies to primipara and to multipara with uninjured birth canals. It has nothing to do with multipara with torn and relaxed outlets.

There are many types of injury to the birth canal, but the most important may be grouped roughly into three classes.

Class I. Lacerations of the floor, including the urogenital fascia, perineum, the floor of the posterior part of the vagina with its fascia and also injuries to the rectum. These injuries result in a greater or less degree of rectocele and gaping of the vagina. If we exclude injuries to the rectum, this type is the least important from the standpoint of functional disturbance afterwards.

Class II. Comprises lacerations of the roof of the birth canal, including the fascial supports of the bladder and tears of the levators at their pubic attachments. This class of injury results in cystocele, dislocation of the base of the bladder, prolapse of the uterus, bladder disturbance, etc. This type is most serious from the standpoint of functional disturbance. It is the most difficult to prevent and is the kind that is most commonly overlooked; it is also the most difficult to repair, impossible to repair satisfactorily.

Class III. Consists of an injury in which the walls of the vagina are wiped off from their bony and fascial attachments, sliding the vagina as a whole downward.

If we analyze the causes of these different types of injury we find that they have a common cause, and that the particular location and type of tear depends on the resistance and strength of the different tissues forming the lower birth canal.

We find, for instance, that if the floor of the canal is not very resistant and tears easily, or, if it distends readily, it gives way first, and, if it tears soon enough the roof of the vagina and the bladder supports are not injured.

If the head is forced upward strongly, due to a very strong and resistant floor, the tear may occur in the roof; the floor will usually tear later if the head is large. This tear in the roof may often be diagnosed by seeing a slight bleeding coming from the roof of the vagina as the head distends the outlet and before the perineum gives way.

If the fascial layers of all sides of the canal are of equal strength, the attachments of the vagina may be wiped off their supports before any tear in the outlet proper occurs.

I will not go into the various causes of lacerations, such as precipitate labor, abnormalities of mechanism due to contracted pelvis, insufficient flexion, persistent occipito-posterior positions, face and brow presentations, etc. I will only mention the necessity of managing the second stage so that the head emerges slowly, the patient under anesthesia, etc.

These considerations, of course, all have a great bearing on birth injuries and should be diagnosed and corrected as soon as possible. We will take it for granted that all these complications have been taken care of, still we will have a large number of lacerations in primipara in which all the underlying indications have been met.

There are two methods of preventing a permanent injury which I wish to discuss; they are both very old procedures but have recently been revived by two well-known obstetricians as part of their technique in an effort to shorten the second stage of labor.

The two methods are manual dilatation of the vagina, first mentioned by Van Horn in the seventeenth century, and episiotomy, first recorded by Ould in 1742.

*Read before the annual meeting of the Minnesota State Medical Association in Minneapolis, October, 1922.

Sir Fielding Ould was an interesting character; he was the second master of the Rotunda Hospital in Dublin and seemed to take a great deal of delight in fighting with his contemporaries, in that respect not differing much from the modern Irishman. He published a very good account of podalic version and apparently used it a great deal. He was not very popular in the profession and never was elected a fellow in the College of Physicians. However, he was a good politician and pulled enough wires so that he was made a Knight by the Lord Lieutenant.

On this occasion the following couplet was put forth by one of his colleagues:

Sir Fielding Ould is made a Knight.
He should have been a Lord by right,
And then each Ladie's prayer would be:
Oh! Lord, good Lord, deliver me.

Manual dilatation of the vagina is not dwelt upon much in text-books, and any interference of the kind was rather frowned upon when I went to medical school. It was brought to my attention in watching the work of Potter of Buffalo.

Dr. Potter, as a preliminary to performing podalic version, which he does as a routine in all cases as soon as the cervix is dilated, dilates the lower birth canal by hand, ironing out the perineum and floor of the vagina till he can easily pull his closed fist out through the vulva. He takes ten to fifteen minutes to do this, proceeding gently and slowly and using plenty of green soap as a lubricant. He does not wait for the head to bear on the floor, but does it as soon as the cervix is dilated so he can proceed with his version. I have come to use this method very frequently in ordinary head presentations, particularly in the home, either in spontaneous deliveries or in forceps operations.

By this method dilatation is slower because you have partially prepared the parts before the head comes through. The head may also be retarded if necessary, or if you wish to deliver rapidly for any reason the parts are already prepared. This treatment relaxes and thins the pelvic floor, so that if, due to great disproportion between the size of the head and the outlet, a tear is inevitable, it will invariably occur in the floor of the vagina where it can easily be repaired, instead of in the roof with possibly a tear of the levators at their pubic attachments or through the fascia between the bladder and vagina where it is very difficult to do a satisfactory repair.

It is not claimed that the parts are left absolutely uninjured as there are probably minute hemorrhages and tears of muscle fibers and at first glance it would seem like a rather unsurgical procedure and possibly inviting infection; but it has unquestionably reduced the number and extent of tears in my hands and the remote results are very satisfactory.

This method is particularly applicable to labors conducted in the home, in contradistinction to the next method I will describe, which is distinctly a hospital procedure and is more radical in its nature. The second method consists of a deep lateral episiotomy done before any marked distention of the pelvic floor has occurred. This has recently been forcibly brought out by De Lee in his prophylactic forceps. His technique has been published and I have seen him do his operation several times.

The method is as follows: As the head descends deep into the pelvis, perhaps just within the vulva, the patient is anesthetized, the area carefully prepared and a deep incision made in the lower lateral region of the vulva starting at the lower angle and going laterally to escape the rectum. The incision is made through the skin and mucous membrane down to and often through the anterior border of the levator ani muscles. Forceps are then applied and the child delivered in the usual manner, the incision being extended if necessary. The placenta is then expressed and the incision carefully repaired layer by layer. First, the mucous membrane is repaired; this may be done by a submucous stitch. The levators and urogenital fascia are then closed with chromic gut and the skin lastly with a subcuticular silkworm, special care being taken to get an accurate closure of the bulbo-cavernosis or vaginal sphincter. This careful repair makes a water-tight closure of the wound and militates against infection.

If the operation has been done at the right time before any tears have occurred there will be no other injury to the birth canal; the bladder fascia has been spared, the rectum has withdrawn safely to one side out of harm's way, and the incision is in the most favorable situation for a good repair. Ross McPherson, in speaking of episiotomy, says, "I am inclined to believe that in the average primipara under suitable surroundings, in the hands of a competent obstetrician with full anesthesia and proper technic, an easy low forceps where no

pressure is applied by the blades and which is preceded by an episiotomy just as the perineum begins to distend offers a more satisfactory means of delivery than by waiting for nature to effect the birth."

H. W. Shutter, in speaking of the measures to be used for the protection of the bladder, says, "Episiotomy releases the head posteriorly, takes off pressure under the symphysis and frequently spares the bladder."

With a good repair a condition approaching a multiparous perineum and vagina is attained; this has been thought by some to be a disadvantage. Another objection is the added danger of infection. Strict asepsis must be obtained, under some difficulty it must be admitted, but the cleanly cut tissues are in much better condition to heal readily than are the irregular bruised tears so often encountered.

What of the next labor? I have not done this operation twice on the same patient. I started it only about eighteen months ago and have some patients who have had the operation done and will soon be at term with their second baby. If you may judge from the condition some months later when the scar is scarcely visible, and without induration or rigidity I think you could safely disregard the former operation and conduct the case as you saw fit.

This method aroused a great deal of criticism when De Lee first presented it, but after seeing him work and seeing his results, I concluded to try it. I use the method only with primiparae who come to the hospital.

I have complete records of thirty-four cases of episiotomy. Of these, twenty-six were of the deep lateral type with forceps application and eight were of the central type. There has been no fetal or maternal mortality.

Of those of the lateral type five had a temperature of 100, at one reading or more, or 19 per cent. One of these was a case of post-partum hemorrhage; on removing the packing in twenty-four hours she suffered from a pulmonary embolus with sudden pain in the chest, bloody sputum, temperature of 105, pulse 140. Her fever left in ten days and she recovered with a very satisfactory perineum. Another had a frank bronchitis with râles, cough and profuse expectoration. Another case had a temperature of 100

at one reading only; she was of the hysterical type and had been two days in the first stage of her labor. No cause for her fever was ascertained and the episiotomy healed well.

Two cases, or 7 per cent, got an infection of the episiotomy wound. One had a temperature of 100 for one day; the skin separated but the muscles and perineum held and she got a good result. The other case ran a fever of 102 for two days reaching normal in five days, there was a slough of the lower end of the incision, the floor of the vagina was not involved, however, and the hole gradually filled in and she got a fair result.

The central episiotomies did not run any fever.

I compared the incidence of fever in my episiotomies with that of the hospital as a whole for 1921 and found that in the forceps cases there was a fever of 100 at one reading in 30 per cent of the cases, while in the spontaneous deliveries the fever touches 100 in 19 per cent of the cases.

I feel from this comparison that the performance of this operation does not increase the percentage of fever.

I have inquired carefully as to the discomfort immediately post-partum and I am convinced that there is no more discomfort than after an ordinary repair; neither do I think it is any less.

One case with a contracted pelvis suffered a separation of the symphysis pubis, with classical symptoms. This was a hard forceps delivery. This patient's episiotomy wound healed beautifully, there was no bladder injury and not the slightest cystocele, rectocele or prolapse was evident three months later. She completely recovered from the ruptured symphysis.

Final Results.—The first two or three cases did not get a good scar because of faulty anatomical repair; this was due to lack of experience. Four cases had some tenderness at six weeks, there was slight induration and a small granulating area usually at the muco-cutaneous margin. Two of these cases were seen at six months and had no symptoms; the others did not report again.

The other cases were classed as satisfactory. The perineum was firm, rectocele or cystocele were absent, there was no discomfort and the vaginal mucous membrane was not visible when the knees were widely separated.

After the incision is made the opening takes a

peculiar shape due to the cut being made laterally and the pull of the muscles not being symmetrical; a careful anatomical repair must be made to get a good result.

A median episiotomy in my experience is best used in a different class of cases than the deep lateral episiotomy. I use the deep lateral in rather high forceps cases where the arrest of the head has taken place before it has reached the floor and before it has had a chance to distend it.

The median episiotomy is used in spontaneous cases where needed, after the perineum is well distended and where I think a tear will occur. The median cut is sufficient here and is much easier to repair.

Pomeroy, an ardent supporter of median episiotomy, says, "If you use it in large heads and small vagina, wait until the head dilates the sphincter and dilate it by hand so that if it is necessary to incise or it does tear you will have a relaxed muscle to unite instead of a contracted one."

I believe that the lateral cut is much better to use in cases where the disproportion is so great as to endanger the rectum, as with the lateral episiotomy injury to the rectum should never occur.

I am not prepared to follow Dr. De Lee entirely in his routine use of episiotomy and forceps nor am I prepared to follow Potter in his use of version in all cases, but I have found their methods of protecting the lower birth canal from permanent injury very satisfactory and I offer my experience in these methods for your discussion.

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DISCUSSION ON THE PAPER OF DR. J. R. MANLEY

DR. ALBERT G. SCHULZE, St. Paul: After having read the paper which has been presented by Dr. Manley, I have come to one conclusion, namely, the paper is rather difficult to discuss.

Clinically, or pathologically, there are two kinds of lacerations. There are the visible ones, which are in the form of abrasions, bruises, or lacerations, and the invisible ones or those that are submucous. The latter consist of injuries to the fascia and levator ani muscles. They are not seen at the time of delivery, but two or three months afterward we find the patient suffering from rectocele and cystocele and a badly damaged and relaxed outlet.

I have done manual dilatation in those cases where I did version or forceps delivery. I have done episiotomy when justified. Neither of them have I done routinely. As regards episiotomy, I am partial to the median incision. If there is fear that the incision will be extended into the rectum, a pair of scissors curved on the flat, will direct it to the side, thus away from the rectum. In those cases where I did an episiotomy and did not get results, as indicated by examination two or three months after delivery, I felt that I had waited too long before making the incision. Submucous injuries may take place without any evidence on the surface. There may be no injury to the mucous membrane at all, but you do have an overdistended outlet. I think there is something good in Potter's version. Although I am not here to advocate that procedure at this time, I do believe Potter has some points in his technic that are mighty good, and manual dilatation is one. Perhaps the only serious objection to manual dilatation is the question of infection. In my clinical and hospital work I always instruct the internists to refrain from vaginal examinations as much as possible. Are we not going to the other extreme by disregarding that when we do manual dilatation?

The essayist reports twenty-six cases of deliveries with deep lateral incision and forceps application; more than I have had in my private or hospital work, or the two combined. If he did these forceps deliveries with the idea of doing the De Lee prophylactic forceps, I cannot lend my moral support to it because I doubt whether the time has come when we can offhand recommend De Lee's prophylactic forceps.

I do not care when, or how, or what you do, you will not get 100 per cent results in these cases.

There are other factors to be considered, one of which the essayist has not mentioned, namely, the shape and size of the bony outlet. It does not matter what procedure one may adopt, you are at the mercy of it. Some writer has analyzed cases according to the size of the pubic arch. If that arch is small, the fetal head will be forced back against the posterior segment of the outlet, and you will get a laceration of the perineum, whereas if the pubic arch is roomy you are more likely to have damage done to the anterior segment, while the posterior will be spared.

DR. J. R. MANLEY, Duluth (closing): I have nothing further to add except to make myself clear in what I have said. I am not doing De Lee's prophylactic forceps as a routine to hurry up the second stage of labor. These cases I reported were cases which in my judgment would do better with forceps delivery. I simply resort to episiotomy when I employ forceps on a primipara.

Dr. Schulze has remarked about the bony pelvis. What he said is true, but even if you have a small pelvis, these women will do much better if you do episiotomy. For instance, in the case where I had a separation of the symphysis, the woman had a contracted pelvis and perhaps could have been delivered better in some other way. As it turned out, I am glad she was not delivered any other way because she will be able to have other children with very little trouble.

MALINGERING WITH A VENGEANCE

W. W. LEWIS, M.D., F.A.C.S.

St. Paul

In the ordinary walks of life the hysteric generally falls in a way that does not hurt him, and the malingerer usually keeps within the bounds of safety to himself. Only to avoid considerable hardship or personal danger, such as military service, penal servitude and the like, do we expect to find malingerers with fortitude and perseverance sufficient to inflict upon themselves injuries of a degree that endangers permanently their well-being, their health, and especially the integrity of their special sense organs.

In the army it was not at all an unfamiliar experience to see some big fellow feign all kinds of physical ailments, hoping to be closed out and sent home; and right next to him a little, puny, anemic chap exhaust every means to bluff his way through and into combat assignment; which brings to mind John L. Sullivan's immortal, "The bigger they are, the harder they fall."

Generally speaking, in office practice, the oculist is on his guard against malingering only when the examination is of a nature where he knows claims for damages for personal injuries are involved, where insurance indemnity is sought, where examination for employment, life insurance application, or indemnity, is under consideration, and, in general, only where a probable or apparent motive for unfair dealing might be suspected. As a result, many of us have been stumped and fooled to a degree that is not at all flattering to the experienced practitioner. On the other hand, and much more grievous to the peace of mind of the conscientious doctor, to suspicion or accuse and mark a patient as a malingerer and a faker erroneously is an error in responsibility from which we all shrink.

Among the insane, self-inflicted injury is not at all uncommon, and many cases are on record where complete evulsion of the globes, gouging out of the eyeballs by their bare fingers, has been accomplished, including severance of the optic nerves and extrinsic muscles. Axenfeld's report on this subject includes cases of his own knowledge as well as many referred to in the literature. This, among the known insane, and especially the custodial insane, is quite aside from what I refer to in malin-

gerers; persons who most probably are to be regarded grossly as entirely normal, or at least of the usual average, in their lives and intercourse among their fellows, neighbors and friends, and who themselves, until such impulse appeared, as a result of the stress of some personal fear or revulsion in their own existence, never dreamed of such a possibility.

Of the many malingerers that I have seen, two cases were so outstanding in degree of misdirected courage and fortitude that I shall speak only of them.

One, a young man of twenty-five or twenty-six years of age, who before and after his self-inflicted injury, according to the records, was entirely normal while under observation, was apprehended by the St. Paul police as an escaped convict from the penitentiary of an eastern state, and held in a cell at the police station. When he was being removed from the cell, he stumbled out, feeling his way like a blind man. Questioned as to why he acted so, he replied that he was blind. Knowing that the man was all right when he was locked up in jail, attendants were not much impressed by the man's groping about until it failed to wear off, and the police surgeon, I believe it was, looked at the eyes of the prisoner. He was hurriedly brought to the City and County Hospital, and, as the visiting staff man, I was summoned. I found both eyeballs incised horizontally across the corneæ, with anterior chambers collapsed and iris protruding. An iridectomy of the prolapsed iris was done and the man put to bed. The unfortunate fellow told me, after being taken care of, that he had slashed his own eyeballs with a razor which he had in his pocket; and explanation of his hideous act was that he had taken an oath, upon escaping from the prison, never to see the place again. In all probability he meant by his oath to suicide rather than be taken back, but, lacking the courage of gross self-destruction, resorted to his dreadful deed in the hope that it would keep him from being returned to prison and maybe lead to an institution for the blind; at any rate, anywhere but the prison, he cared not where. Luckily the wounds were below the center of the corneæ, and eventually he got good sight in one eye and some little sight in the other. Notwithstanding his desperate attempt at evasion, he was returned to the prison from which he escaped.

The other case was that of a woman about forty years old, a professional nurse in institutional

work. She came to me from out of town, with a much swollen right eye. The lids were tremendously swollen as in erysipelas, except that they were edematous rather than phlegmonous in character, especially the lower lid. Upon opening the lids the lesion was found at the center of the conjunctival surface of the lower lid. A large croupous patch of exudate covering an ulcer extending the entire depth was found down to the fornix at the central portion of the lid. There was also a gray clouding of the lower central portion of the cornea. Her story was that a bit of disinfecting solution had splashed into her eye a week previous. She was taken care of with the ordinary remedies indicated, and after a rather prolonged stay the eye condition got well and she returned to her institution for duty. About a week later she came in again with exactly the same picture in the left eye, but this time could give no such reason for the condition as previously, i. e., that the disinfecting fluid had splashed into her eye. Not having such a history to account for the condition of the second eye, I began to try to correctly identify the pathology found. Diphtheria was excluded in the absence of constitutional symptoms and by bacteriological examination; tuberculous ulceration did not fit in in the absence of preauricular gland enlargement, nor did lupus, pemphigus, actinomycosis, Parinaud's disease, syphilis, or any other disease of which I could think or read. Strangely, this lesion would get nearly well, and then relapse with all the acuteness of the original reaction. After many weeks of better and worse condition this eye got well, and she went back to her work. Again, for a third time, after a week or so, she came back with the condition in both eyes. This time I called to my aid, Dr. Boeckmann, Sr., and Doctor Burch, both of whom had seen an enormous amount of eye pathology. At this period none of us, thinking only of infection as a cause, could place in his mind what the condition was, so we determined to send her to the hospital for observation, and as she was practically unable to get around, with both eyes nearly out of commission, she seemed entirely willing. At the hospital Doctor Warwick agreed to try to work out the case bacteriologically, but very early reported, "No bacteria." At about this stage of the trouble all of us, at about the same moment and for the first time in our observation, thought of self-inflicted injury, and so it proved to be. This patient had stood before a mirror with silver

nitrate stick in hand, had applied it to the everted lid of one eye; later to the other; and, again, at a later date, to both, and had reapplied it repeatedly, even to the still unhealed ulceration. I, at least, stupidly had never suspected such a thing. A motive, then, of course, was all that was necessary to complete the evidence, and upon inquiry it was easily put together. The patient, feeling that she was not regarded favorably by the superintendent of nurses at the institution, and that it was but a matter of a very short time when she would be dispensed with, conceived the idea that disability acquired in the service guaranteed her retention in the employ of the institution and safeguarded her against discharge. With this conception of security, she had the fortitude to withstand what must have been most intense pain and suffering. Later information brought to us word that she had been operated upon, some say six, others say nine times. Knowing that she had fooled others as well as myself was some little comfort to me.

In contradistinction to those inclined to malinger, persons frequently are seen who might be erroneously regarded as malingerers. During the period of the war, and especially during the first months of lively enlistment prior to the operation of the draft, it was refreshing and inspiring to come in contact with men, young and old, with defective eyes and ears, who used every dodge and trick to cover up their physical defects so as to get into the service. One group of men, however, of this type had a heavy cross to bear, and the plight of such sensitive and patriotic fellows was really pathetic. I refer to young men with amblyopic eyes, otherwise physically perfect, and with eyes normal in appearance and only too often normal, in every way known, objectively.

One fine young man I have had directly under my observation for many years. He looked a perfect specimen; eyes perfectly straight, normal muscle movements, normal media, fundi, nerve heads, and in every objective way with perfect eyes, yet in one amblyopic eye the vision was less than one-twentieth with full but insignificant correction. It was, indeed, a hard road for this poor chap. Highly intelligent, sensitive and intensely patriotic, notwithstanding the fact that he spent his own money traveling around from one enlistment center to another trying to get into any branch of the army or navy, he was often accused of faking blindness in the amblyopic eye, even by competent

oculists of the army at such enlistment places, who, like myself, could discover no objective sign or suspicion of an abnormal eye; and several near-physical combats resulted. Fortunately my record of such amblyopia was on his record chart at examinations made several years preceding the war, and I received several communications regarding him. This young man pestered the President and cabinet members for months, demanding admission to army or navy service; made a trip to Washington and succeeded finally, by bringing pressure through his college fraternity upon the Secretary of War, in being accepted in special service in the army.

A man of fifty-two years of age, whom I had known years ago, when in general practice, as a heavy drinker, but whom I had not seen for many years, came in to be refracted. His speech was rather muffled, the control of his face muscles seemed somewhat tardy, and, above all, the fixation of his eyes was so poor and unsteady that I immediately regarded him as intoxicated and told him to come in later when he was "in better condition." He said nothing and went away, but something (probably his silence as he went away) told me that he realized what I meant and that he was hurt. The next day he came in, as I had told him to, and one of the first things he said to me was, "You thought I was drunk yesterday; didn't you?" Then the poor fellow told me of what a struggle he had had, on account of his affliction, in getting employment since having a stroke a few years ago, and that he had not touched liquor for several years. I looked him over closely, as I should have done the day before, and found slightly remaining evidence of a hemiplegia in his arm and leg. The lack of fixation and unsteadiness of his eyes was due to a continuous rotatory nystagmus; and the muffled speech, from a slightly lax musculature in one side of his face. I was very meek, mild and considerate of everybody for the balance of that day.

We oculists are all familiar with the small children, the greatest of all mimickers and imitators, who desire to be decorated with spectacles like the child next door, and how deliberately they persist in refusing to see even the big test type letters until a blank lens is put before their eyes, when they immediately see as much as they are supposed to, expecting, of course, to be given the glasses that their hearts desire. But this vanity is not limited

to children. I have known many grown-ups who would not take off glasses even after they had been shown that their refraction was practically emmetropic, with no muscle imbalance, and that the glass that best fitted them was practically a blank, or window glass, of no refractive strength.

One young married man from out of town but a week or two ago came in with glasses that upon neutralization were found to be a blank. He had received them from an optician two years before and had worn them steadily since. I admired the optician's courage in giving him a blank, as long as he demanded glasses, rather than the frequently prescribed plus 25 sphere, which at least brings the sale of spectacles. This chap, notwithstanding a careful explanation as to the ridiculousness of wearing a blank glass, refused to take them off, and went away proud of the decoration. A ring in his nose might also have been very acceptable to his childish vanity.

Parents, too, occasionally are as childish as their young. One experience, a year ago, capped the climax of my experience with adult light intellectuals. A father came into the office with an eight-year-old child, complaining that the child could not see well, and that she complained of inability to see what the other children saw at school. I had but merely started the examination when it was evident that the little scalawag was faking, for without a glass in front of her eye she claimed inability to read more than the big letter at the top, and with but a plus 25 sphere she read more than normal. Thereupon I took the father aside and told him that the child was shamming, and in all probability wanted glasses because some small neighbor child had them. He resented my imputation, and stoutly maintained that something must be wrong, that there must be at least some strain, so I told him that in only one way could I, with absolute certainty, prove the absence of all degree of refractive error, and that was by the use of atropine and retinoscopic refraction, but that I thought it unwarranted in view of the child's very evident attitude. However, he wanted me to go through with it. So, after two days' use of atropine, I retinoscoped the child and found her practically emmetropic, with no muscle imbalance or any other ocular trouble. Under atropine, too, with small spherical correction she read everything in sight. I informed the father that I had proved my opinion of the day before, and that the child needed noth-

ing more than a little "suggestion" treatment, or probably a little of the standard persuasion so effective with children of substantial old-school parents. He paid his bill by check before he left. The next day I had notice from my bank that payment on that check had been stopped. I then telephoned the fellow, telling him that my bank had notified me that payment of his check had been stopped. He replied that he had stopped payment. I asked him why, and he replied that after leaving the office it seemed to him that he was getting nothing for his money, so he stopped the check. Well! He paid by persuasion, and I cooled off after philosophizing, "Like begets like," and I felt more charitable and sympathetic toward the child.

"We must return to the basic idea that the granting of the degree of Doctor of Medicine means that a student is capable of handling the ordinary problems of general practice. This is certainly necessary before he can be safely trusted to advance in any special field. In the ordinary small community we find the general merchandise store. One can obtain here the essentials of human life in ordinary existence. If one wants any special appliance or something unusual it takes time to obtain delivery and one must either send or go to a larger field. This illustrates general practice and also the requirements for every medical man. In our larger centers we have the department store, where there is a marked extension of everything represented in a general merchandise store with experts in charge of each department. Medicine likewise is handled in this way where specialists in various lines are available. In the general merchandise store the proprietor knows everything that he has on hand and how to guide his customer to get promptly the essential things that he needs. In the general department store much is left to the customer himself. Without guidance he may over-purchase in a single department when his real needs lie in another. It is inevitable that there shall be these two forms of organization. One of the ways to protect the person who deals largely with specialists is to have the specialist understand thoroughly the essentials of general medical practice."—Extract from address by Dr. Ray Lyman Wilbur, President-elect of the A. M. A., at annual meeting of the California State Medical Society, May 16, 1922.

II. PREOPERATIVE PREPARATION OF PATIENTS WITH OBSTRUCTIVE JAUNDICE. END RESULTS IN THIRTY-FOUR CASES*

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Few surgical conditions compare in risk with obstructive jaundice in which the mortality following operation is high, regardless of the care and skill of the operating surgeon. The reason for this high mortality is the tendency of these patients with jaundice to develop fatal postoperative intra-abdominal hemorrhage.

In 1921, Dr. L. P. Bell and I presented a suggested régime in the preoperative preparation of patients with obstructive jaundice, based on the fact that calcium chlorid in small doses, injected intravenously, reduced the coagulation time of the venous blood to approximately normal limits in the majority of instances, and prevented the occurrence of fatal postoperative bleeding. This has been demonstrated experimentally by Lee and Vincent, and clinically by Wright and by myself. At that time 5 c.c. of a 10 per cent solution of calcium chlorid in redistilled water was given intravenously, daily for three days, to six patients with obstructive jaundice. The coagulation time of the venous blood of these patients had been elevated beyond normal limits, but a prompt reduction was noted following this procedure. All of these patients were successfully operated on, and without postoperative hemorrhage.

Besides calcium chlorid given intravenously, large quantities of carbohydrates were given by mouth and glucose solution by proctoclysis, in order to increase the supply of glycogen to the tissues of the jaundiced patient. This is the food of choice for patients in toxic states as shown by Opie, and in cases of liver deficiency, as has been shown by Mann. Large quantities of water by mouth increased the body fluids and helped eliminate bile pigments. Our success in preventing postoperative hemorrhage in these six patients led us to continue this method of preoperative preparation.

*Read before the Minnesota State Medical Association, Minneapolis, Minn., October, 1922.

Thirty-four patients with obstructive jaundice operated on at the Mayo Clinic between July, 1921, and July, 1922, came under my observation during their preoperative preparation, at operation, and during convalescence. All were operated on and none died of hemorrhage; in only two bleeding occurred from the wounds following operation. All of the patients had jaundice of 2+ or more (on a basis of 1 to 4), and 80 per cent were judged risks 3 or 4 by the consulting surgeon. An estimation of the coagulation time was made according to the method of Lee and White before the administration of calcium chlorid intravenously each day and on the morning of the day of operation. If the coagulation time of the venous blood had not been lowered to less than nine minutes, operation was postponed until such reduction was obtained. In one instance a coagulation time of twelve minutes was not influenced by calcium chlorid, but intravenous infusion of citrated blood lowered it to six minutes; the patient made a splendid recovery from the operation. Although the coagulation time of the venous blood was nine minutes or less, in some of the patients with jaundice it was thought best to administer calcium chlorid intravenously as a precaution against postoperative hemorrhage. In such cases it is possible that little change would occur in the test of blood coagulation as made in the test tube; nevertheless, bleeding did not occur following operation.

The corollary of this observation is that the jaundiced patient should be under close observation during the period of preparation, and an operation should not be attempted until the coagulation time of the venous blood is lowered to normal limits.

Patients who received the preoperative preparation outlined had stationary or subsiding jaundice. When jaundice is increasing in intensity, as sometimes occurs after an unsuccessful attempt to reestablish the flow of bile from the liver after operation, the blood requires a progressively increasing time to coagulate, regardless of what or how many hemostatics are administered. Unless the flow of bile is reestablished, the wound surfaces bleed and the patient soon dies from renal insufficiency, which is a result of the massive effect of the bile on the kidneys. This point has been emphasized in a recent paper by Parham and myself.

The postoperative course of patients with obstructive jaundice operated on over a similar period

prior to July, 1921, is of interest. At that time a few doses of calcium lactate by mouth, or a single transfusion of citrated blood, constituted the preparation for operation, and the only estimation of the coagulation time of the blood was at the primary examination. During this period of uncertain preparation from 800 to 1,500 c.c. of blood was found at necropsy in the abdominal cavity of seven of the patients who died; in three, the gallbladder was also distended with blood.

I do not wish to contrast the hemostatic effect of intravenous injections of calcium chlorid with that of preoperative transfusions of either citrated or whole blood when given by a surgeon experienced in blood transfusions, and when accurate estimations of the coagulation time of the blood are made during such preparation. Large quantities of blood of the desired group are not always available, and the method of preparation by means of intravenous injections of calcium chlorid and the ingestion of maximal amounts of carbohydrate and water has proved very satisfactory.

The possible harmful effects of the three intravenous administrations of 5 c.c. calcium chlorid solution in redistilled water are negligible. Of the thirty-four patients receiving the calcium chlorid intravenously, none showed any reaction other than a feeling of warmth over the body while the solution was being injected; this varied with the rate at which the solution of calcium was injected. The injection should be given slowly enough so that the slightest possible sensation of heat is experienced. Repeated urinalysis and blood urea tests on nearly every patient have not shown any change during or after a course of injections.

My associate, Dr. Bowler, has been working on the effect of intravenous injections of calcium chlorid on dogs in which obstructive jaundice has been produced by ligation and section of the common bile duct. The kidneys were unaffected, either functionally or histologically, by five times the therapeutic dosage for each kilogram of body weight, over a period of seven days, injections being given once daily. The heart did not show evidence of disturbance.

SUMMARY

Thirty-four patients with marked obstructive jaundice were prepared for operation by means of three intravenous injections of calcium chlorid. Large quantities of carbohydrates and water were

also assimilated. None of these patients died of postoperative hemorrhage. Careful estimations were made of the patients' blood coagulation time and operation postponed until the coagulation time had been reduced to normal.

During a preceding period when patients with obstructive jaundice were not accurately prepared and no particular attention was paid to their venous blood coagulation time, except at the primary examination, seven patients died from intra-abdominal hemorrhage.

It has not been possible to determine, either clinically or experimentally, that any deleterious effect is produced by three intravenous injections of 5 c.c. of a 10 per cent solution of calcium chlorid in redistilled water slowly administered.

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DISCUSSION

DR. F. J. PLONDKE, St. Paul: We have all given calcium salts for years in these cases and in others. Dr. Walters' results, backed up by his case reports, are almost conclusive. It seems to me, the treatment he has outlined is very effective in these cases. The simplicity of the method appeals to me, namely, giving 5 c.c. of a 10 per cent solu-

tion of calcium chlorid. Almost any one can give it, and the solution can be made very easily by almost any one.

He made the statement that he did not wish to contrast this method with transfusion. I agree with him that wherever it is possible to give transfusion, after proper preparatory treatment of these cases, it should be done as I think it is more effective. In a comparatively small number of cases it is impossible to do this, because we have come across cases where the facilities do not make it feasible.

I recall one case in which on the eleventh day after operation there was hemorrhage from a stitch hole, and the patient continued to bleed for forty-eight hours until I thought she would bleed to death from this one stitch hole. We tried everything and absolutely nothing would stop the bleeding. It was almost like an artesian well, running all the time. I cite this case to show what these cases will do, so if we have something to prevent this bleeding or to increase the coagulation time, it is certainly a blessing, and from what Dr. Walters has said, he has brought before us something for general use.

DR. ARNOLD SCHWYZER, St. Paul: This subject that Dr. Walters has brought before us is eminently practical and of very great importance, and I want to emphasize the value of this method by citing one case.

Last Wednesday (three days ago) a patient was brought into the hospital who had had severe jaundice for two weeks. His coagulation test was from thirty-three to thirty-five minutes. I have not had great experience in testing patients for the coagulation time of the blood. The longest case we have had was twenty-six minutes in a hemophiliac. In the case I have just mentioned, it was thirty-three to thirty-five minutes. We started with calcium injections, 5 c.c. of a 10 per cent solution, and 48 hours later (last night) the coagulation time was reduced to fifteen minutes. At the same time we gave calcium internally. I do not think we can go so far as to say that the internal administration of calcium salts is valueless. That would be going too far.

About four years ago a child was brought to me, bleeding and bleeding from the frenulum linguac. With artery forceps I threw a ligature around the bleeding vessel. The child had had bleeding from somewhere in the mouth ever since birth every month or two. Since then he has had no bleeding, because I told the mother to give every two months calcium salts by mouth, calcium lactate, calcium phosphate, and calcium chlorid, one gram of each, three times a day, for three days. The value of this treatment was never more deeply impressed upon me than in the one case of jaundice I have cited before in which the coagulation time was brought down to fifteen minutes from thirty-three to thirty-five minutes. Two days later, i. e. four and a half days after the first injection of calcium, we operated upon the patient for a common duct stone behind the duodenum. No tendency to excessive bleeding. The coagulation time was then eight and one-fourth minutes.

DR. ARTHUR T. MANN, Minneapolis: This is an important paper and was well presented. There is one suggestion I did not hear made in the paper and it may be

interesting to you, namely, no matter where we are, we can use horse serum or some of the coagulants that are injected, and that is an easy thing to do. Better than that, if you take some whole blood from a parent, a brother or sister, it can be done anywhere. If the blood is injected into the muscles of the buttocks or somewhere else, we introduce elements which increase the activity of coagulation and shorten the time of coagulation, so that the effect of the calcium salts can be increased by the injection of horse serum, or we can give the antitoxin which is used for diphtheria, which is a horse serum, and the horse serum will increase the activity of the coagulation.

DR. WALTMAN WALTERS, Rochester (closing): I should like once more to emphasize the main point of the paper, namely, that patients with obstructive jaundice should be under close observation prior to their operation, and operative procedures postponed until their blood coagulation time is reduced to normal limits. Unless this is done the operative risk is greatly increased.

The reason why jaundiced patients bleed is because the bile pigment circulating in the blood removes a portion of the free calcium from the blood and lengthens its coagulation time. This is the opinion of King, Bigelow and Pearce. The quickest method of returning calcium to the blood is by placing it in the blood stream itself, provided no untoward effects result. In our work we have been unable to note any deleterious effects from three intravenous injections of 5 c.c. of a 10 per cent calcium chlorid solution when made up in redistilled water, and carefully sterilized.

In regard to the number of jaundiced patients with a high coagulation time, it is my opinion that approximately 70 per cent of patients with obstructive jaundice, even of a marked degree, have a coagulation time of less than twelve minutes. The remaining 30 per cent have blood coagulation values ranging from twelve minutes to thirty-five minutes.

The oral administration of calcium salts will suffice in some instances to reduce to normal limits a prolonged blood coagulation time which is the result of obstructive jaundice. However, there are some patients whose coagulation time will not be affected by the oral administration of calcium salts, and those are the patients to whom intravenous injections of calcium are particularly applicable.

There is no doubt that transfusions of whole or citrated blood are of value in reducing the prolonged blood coagulation values in many instances. However, I have seen one or two patients with obstructive jaundice who, in spite of repeated preoperative blood transfusions, bled to death from stitch holes following operation. One of the patients who had a preoperative course of intravenous calcium chlorid bled severely after operation, and yet the bleeding ceased after two transfusions of citrated blood. The corollary of this is that if one method of preparation does not tend to lower the coagulation time of the blood to normal limits, another method may accomplish the desired result immediately. In other words the important thing is to reduce the blood coagulation time to normal limits prior to operation, and the method described has proved very satisfactory in this respect.

CHOOSING ANESTHESIA FOR GENERAL SURGERY*

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To reduce mortality and morbidity and at the same time give the patient the best ultimate result, has long been the great struggle of surgery. The recent advancement in surgical technique has been so marked that it seems that the limit of improvement had been almost reached.

Recently, much attention has been turned to the choice and administration of anesthesia for general surgery. Ether has long been the great favorite of all anesthetics. So far as the convenience of the surgeon and the immediate results with the patient are concerned, it is by far the anesthetic of choice.

But let us consider some of the remote results. It has long been known that patients with pathological lungs or kidneys did not do well under prolonged ether narcosis, but it remained for Crile to show that it is not only harmful to the normal subject, but does not protect the patient from the harmful effects of the operation. Ether narcosis on the normal dog for four hours produced cell changes in the brain, liver and adrenals. Many of these animals, from no other cause than ether narcosis for from four to six hours, died on the following day. Crile's experiments show that while under general anesthesia, pinching or otherwise injuring the sensitive tissues of the body, cell changes were produced in the brain similar to those found in the brains of patients who had died of shock or exhaustion from other causes. At the same time, animals under general narcosis showed much less brain cell changes when the traumatized area was blocked off from the central nervous system. These facts, at least, suggest that prolonged ether narcosis is toxic and that it does not prevent traumatic shock. His experiments showed further that ether narcosis lessens and sometimes prevents phagocytosis, and causes a marked diminution in the alkaline reserve of the blood.

We know that phagocytosis is an important process of protection in the presence of infection.

*Presented before the Minneapolis Surgical Society, April 17, 1922.

The reduction in the alkaline reserve, at least, tends to the condition called acidosis. This is quite generally conceded to be an undesirable post-operative condition. We know that ether is an irritant to the lung and kidney. A mild infection then may be aroused to marked activity by the irritation of ether narcosis. As stated above, cell changes are produced in the brain, liver, and adrenals. We know these changes in the liver tend to fatty degeneration. The liver is the most important agent of detoxication in the body. To harm this important organ during a major operative procedure may jeopardize the patient's chances of recovery to a high degree.

Ether causes more post-operative vomiting than any other anesthetic. Stomach contents may be aspirated into the lungs of the semiconscious patient. I have seen two gastric resections under ether terminate in gangrenous pneumonia. In both cases, the pathologist demonstrated what he called stomach contents in the gangrenous area of the lung. However, this unwelcome condition may be avoided by close care of the patient, turning him on the side and aiding him to expel vomitus during the semiconscious period.

So far we have cited some of the danger signals of ether. The next most important general anesthetic is gas oxygen. This in the hands of one not well trained in its use increases the immediate danger to the patient and is not satisfactory to the operator. In general, it may suggest the same remote dangers as ether. Crile has shown that its remote dangers are not so great as those of ether. He estimates that the cell changes in the brain are three times as great under ether as they are under gas oxygen. Chavasau and Rathery advise against gas oxygen in patients with high blood pressure. They advise against its use in all those subject to pulmonary congestion, especially the aged and tuberculous. They also state that gas oxygen does not produce so great an effect on the pathological lung, liver, or kidney as ether.

Surgical shock is a great source of worry to the average surgeon. The genesis of surgical shock is not definitely known, but it is quite definitely known that psychic strain and trauma are at least important contributing factors to this troublesome condition. To eliminate or minimize psychic strain, we are frequently obliged to administer some general anesthetic, but this may be avoided, if considered advisable, by skillful handling of the pa-

tient, administration of preliminary narcotics and skillful administration of local or regional anesthesia. The effect of trauma, one of the chief contributing factors to surgical shock, cannot be eliminated by general narcosis. Careful handling of the tissues and nerve blocking are most essential in attempting to avoid this troublesome factor.

As stated above, ether may prevent phagocytosis. Peritonitis, then, the most frequent offender in surgical deaths following abdominal operations, would most likely be fostered by ether narcosis. Whether peritonitis contributes to surgical shock or surgical shock contributes to peritonitis, we are not always able to say, but the two go hand in hand, and if we could eliminate or minimize the frequency of occurrence of these, we would almost proportionately reduce our mortality statistics in abdominal operations.

The patient whose vital functions are at par, or nearly so, provided he has not been exposed to respiratory infections, in the hands of a skilled surgeon and skilled anesthetist, will usually experience but slight ill effects from either ether or gas oxygen. But the patient whose vitality is already very low should not be subjected to prolonged general narcosis, neither should he be exposed to the severe trauma of a severe operation without first blocking the nerve paths from the traumatized area to the central nervous system. To observe a large number of such patients operated on simultaneously, some under general and some under local or regional, would readily convince one of the preference of the latter for these special cases.

Crile's anoci-association theory has aroused new interest in local, and a judicious combination of local and general anesthesia. Farr has done much for the cause of local anesthesia. He has demonstrated that it not only requires special training for the administration of local anesthesia, but special training on the part of the surgeon to operate under this form of anesthesia.

There are a certain number of patients who will not do well under local anesthesia. The psychic strain without some general anesthesia may do more harm than the amount of general anesthesia necessary to produce analgesia. By forcing patients who do not co-operate, to submit to local anesthesia, we may do the cause much harm. The unfavorable impression created in the mind of this patient may prejudice the minds of others, who should not

receive general anesthesia, to the extent that they refuse to be operated upon without it.

I have used the term local anesthesia. Farr and others who have had a wide experience in the use of local anesthesia, advocate local almost entirely. Objections have been raised to this method which may not be sustainable. My experience with wound trouble with local infiltration is limited to one case.

The patient was 65 years old. Cholecystectomy was done under local infiltration. The convalescence was uneventful. The wound was perfectly clean and showed no sign of infection. The sutures were removed on the twelfth day and the wound opened from end to end.

We cannot say that this condition was caused by the injection of anesthesia, yet it could not be accounted for in any other way. However, I do feel that "infiltration block" is more satisfactory in many cases, although more difficult to administer than local infiltration.

Novocain and procain in dilute solutions are comparatively nontoxic in the vast majority of cases if properly administered, yet there are many mishaps following their use.

Wiedhoff states that collapse has been exceptionally observed with simple nerve blocking, with lumbar, sacral, paravertebral, or splanchnic regional anesthesia. He cites two cases of death under paravertebral anesthesia for goitre operations and others under high sacral to a total of fourteen fatalities. Apparently many, if not all, of these cases were due to faulty technique in administering the anesthetic—perhaps mistakes in strength and kind of solution as well as in technique of injection. The toxicity of novocain is suggested by the death of a 15-pound dog, fifteen minutes after 6 ounces of a 0.5 per cent solution was poured into the peritoneal cavity. Death was due to respiratory failure.

Certain patients have a distinct idiosyncrasy for novocain. Two patients came under our observation who, on repeated trials, showed toxic symptoms after injecting 2 or 3 c.c. of a 0.5 per cent solution intramuscularly. In one of these cases, the same solution was injected to the amount of 300 c.c. in the following patient with no toxic symptoms. To eliminate the possibility of danger from this source, the tolerance of the patient to novocain should always be tested before coming to the operating room.

Adrenalin is a marked adjuvant in novocain anesthesia, but may be used to the great disadvantage of the procedure. Many patients react very readily to small amounts of adrenalin. In these cases the rapid, forcible beating of the heart frequently arouses the anxiety of the patient to a point where it is difficult to keep him under control. If carried to excess, it may so disturb the patient that it is necessary to administer a general anesthetic to overcome the psychic condition. To alleviate this factor, we may prepare but one ounce of solution, adding 5 minims of adrenalin. If the patient reacts readily the proportionate amount of adrenalin added thereafter may be decreased.

As stated above, the injury to skin, fascia, and peritoneum are important factors in the production of shock, provided these stimuli are not intercepted on their path to the central nervous system. Therefore, if we are obliged to use some general anesthesia after the abdomen is open we have accomplished something in the way of preventing shock by injecting the abdominal wall.

With modern methods of diagnosis, we are frequently able to determine quite accurately the extent of the operative procedure before the abdomen is opened. In serious cases then we would not expect to do a great deal of exploring. If the operative work is confined to the stomach or intestine alone, it may be carried out with little inconvenience to the patient by merely anesthetizing the abdominal wall. If much exploring or pulling is to be done, a small amount of gas oxygen in the hands of an experienced anesthetist will serve the purpose without adding greatly to the risk.

Labat of Pouchet's Clinic, Paris, has introduced some very interesting and valuable ideas in regional anesthesia into this country. Posterior splanchnic anesthesia, as developed by Kappes, Naegeli, Hoffman and Labat, if properly administered, is very satisfactory for gastric resection, gastro-enterostomies, splenectomies and resection of the upper intestine. This gives us anesthesia from the visceral side and when combined with anesthesia of the abdominal wall the above operations may be done very satisfactorily with little shock or annoyance to the patient. This procedure requires considerable practice to carry out successfully. Considerable damage may be done by the inexperienced or by a lack of knowledge of the anatomy of this area, but with experience should

be done with practically no added risk to the patient and excellent results so far as the procedure of the operation is concerned.

Technique.—The patient is placed on one side with a pad under the loin to straighten the spine. The skin is prepared as for any surgical operation. At a point 7 cm. from the mid-line and at the lower edge of the twelfth rib a wheal is made with a fine hypodermic needle. Through this point a flexible, sharp needle of small caliber, from 9 to 12 cm. long, is inserted. We first take contact on the lower edges of the twelfth rib, then withdraw slightly and re-insert at an angle of 45 degrees with the skin surface, aiming to touch the ventral aspect of the first lumbar vertebra. By carefully feeling our way around the artero-lateral edge of this vertebra we are able to penetrate the retroperitoneal tissues anterior to it. In this tissue the splanchnic nerve lies on either side. The needle is first introduced without attaching the syringe. If a vessel is pierced the blood will flow from the needle as a warning. This is of little consequence if the needle is immediately withdrawn and reinserted until no blood comes from it. With the needle in place, the syringe is attached and injection made. With a very slight to and fro motion, about 30 c.c. of a 1 per cent solution is injected. The patient is then turned on the other side and this procedure repeated. Finally the patient is turned on his back and abdominal wall is infiltrated.

Many writers have condemned this form of anesthesia on account of its impracticability. To be sure it requires considerable practice and at times the most skilled will fail to get good results, but in the extreme cases there is no form of anesthesia more satisfactory when administered successfully.

The following case suggests the indication for this method of anesthesia:

Patient, 69 years old, first had signs of trouble five weeks previous to examination and could not take food on account of distress. Soon vomiting began and he vomited all he ate. Food taken several days previously was vomited. Patient lost 30 pounds in five weeks and showed marked emaciation and dehydration. X-ray showed complete obstruction at the pylorus. Hemoglobin 60 per cent, white count 6,000, blood pressure 120-95. Patient was put to bed and filled up with fluids for two days when a gastro-enterostomy was done by merely infiltration of the abdominal wall. Exploration revealed carcinoma of the pyloric end of stomach with no discernible metastasis. Following

this the patient was able to take food and gained weight and strength rapidly. Four weeks from the time of the first operation a resection of the pyloric end of the stomach was done under posterior splanchnic and infiltration of the abdominal wall. The patient complained of no pain during or after the operation. He had no vomiting and asked for food on returning from the operating room and at each meal time thereafter. He was up in five days, left the hospital in ten days, and apparently has been feeling well since.

I have not cited this case to in any way prove the efficacy of this method, but merely to point out its possibilities and the type of case in which it is indicated.

Paravertebral anesthesia, because of its difficulty of administration, may be classed with splanchnic, but when successfully administered is one of the safest and most satisfactory forms of anesthesia. For patients with much reduced resistance there is no anesthesia so safe and satisfactory for kidney, gallbladder or chest operations. For these operations unilateral block is sufficient.

This is not favorable for bilateral anesthesia, as it necessitates too many injections and gives too great a chance of unsatisfactory results. Block infiltration or splanchnic in the upper, or block infiltration, sacral block, or spinal in the lower abdomen are usually more satisfactory for bilateral anesthesia.

To administer paravertebral anesthesia for kidney or gallbladder operations, place the patient in the same position as for splanchnic. Mark off a line along the six lower dorsal vertebrae 3.5 cm. from the mid-line. Taking the spinous processes as landmarks, we mark points directly horizontal to each of the six on this line originally marked off. We then mark off the area corresponding to the first two lumbar vertebrae. Three cm. and in a horizontal direction from each of these two spinous processes, we mark the points of injection. These points of injection are marked off by using a very fine hypodermic needle and injecting enough novocain solution to produce a wheal. We have eight wheals corresponding to the last six dorsal vertebrae, and first two lumbar. We now use a needle 6 to 10 cm. long, and in the dorsal area pass in perpendicular to the surface of the skin until we take contact with the lower edge of the rib. Then slightly withdrawing the needle and inclining it at an angle of 45 degrees upwards and outward, we pass the needle about 1 cm. deeper and should encounter the juncture of the spinal

nerve and rami communicantes of the sympathetic midway between the ribs and slightly deeper. So far the syringe is not attached to the needle. Following this procedure, if a vessel is entered, blood will immediately ooze from the needle and it should be withdrawn and reinserted. With the needle in place, the syringe is attached and 6 to 8 c.c. of 1 per cent solution of novocain is injected. A very slight to and fro movement of the needle point here will aid in getting the solution in contact with the nerve. This procedure is carried out at each of the six points in the dorsal area.

In the lumbar area the needle is inserted in a horizontal direction until the transverse process is encountered, then slightly withdrawn and reinserted to pass just above the edge of the transverse process and about 0.5 cm. deeper. The injection is then made in the same way as above. To illustrate the indication for this form of anesthesia I will cite one very typical case.

Patient, aged 32, had gumma of the liver with ascites two years previously. Two and one-half months ago had a radical hysterectomy for carcinoma of the cervix. She developed pyonephrosis of the left kidney three weeks after the hysterectomy. On account of the lowered vitality of the patient, nephrectomy was delayed, hoping that the condition might subside and that the general condition of the patient would improve. As was feared, the condition gradually grew worse until during the week before operation she had repeated chills with temperature ranging between 102 and 104. Vomiting continued throughout the week and very little food was taken. Here I believe we can safely say general anesthesia was contraindicated, and traumatic shock should be eliminated so far as possible. The kidney was removed under paravertebral anesthesia. The patient experienced very little pain other than the pricking of the needle. There was very little shock as a result of the operation, as evidenced by the appearance of the patient. The pulse was practically the same as when she entered the operating room. The temperature did not go above 100 following operation and in three days was down to normal. Patient took some nourishment on the day following the operation. There was no vomiting at any time after operation and she was eating heartily three days after operation. Up in ten days.

The pathological liver and kidney, together with the very low vitality of the patient, made this method of anesthesia the one of choice in this case.

For chest cases the same procedure is used, but is usually carried higher up than for kidney or gall-bladder cases.

Sacral anesthesia was put on a practical basis by Lawaen in 1910. Sacral anesthesia may be used with great satisfaction for operations on the rectum,

vagina, cervix or bladder. To open the abdomen for bladder or prostate work, it must be combined with abdominal infiltration. Most operators who have used sacral anesthesia, that is, merely injecting the solution through the sacral hiatus into the sacral canal, estimate that it fails to give good results in from 10 to 15 per cent of the cases, while combined with the trans-sacral it practically never fails. Trans-sacral was first described by Davis in 1913. Sacral anesthesia alone requires from twenty to forty minutes after injection to produce anesthesia in the desired areas. About ten minutes after sacral injection we can do trans-sacral with practically no pain, and we usually have thirty minutes to work before the patient is ready by the other method alone. By supplementing with trans-sacral, the anesthesia is made more certain and usually no extra time consumed.

For sacral anesthesia an ordinary spinal needle is quite suitable. To locate the sacral hiatus, pass the finger from the tip of the coccyx upward until it comes to the sacro-coccygeal joint. On each side above, we encounter the sacral horn. Between these we may feel a slight depression over the sacral hiatus. With a fine hypodermic needle, novocain solution is injected to produce a wheal in the skin over this depression. The needle may then be inserted deeper and the heavy fascial covering of the sacral hiatus injected. The spinal needle is then inserted perpendicular to the surface of the skin and as it passes through the skin the point is inclined slightly upward to pass through the sacral ligament, then the needle is carried to a horizontal position and inserted gently, being careful not to encounter the bony walls with force. The obturator is frequently withdrawn to ascertain if a blood vessel has been encountered. If much force is required to insert the needle it may not be passing along the canal as it should. If this be the case, withdraw and reinsert. The syringe filled with 1 per cent novocain solution is then attached to the needle and injected slowly and with little force, withdrawing frequently to be sure we have not entered a blood vessel. Thirty c.c. of solution is injected in this way. This needle is then withdrawn and we wait about ten minutes before beginning the trans-sacral injection.

For ordinary rectal, vaginal or bladder work we inject the four lower sacral nerves. For the Kraske operation we go as high as the fifth lum-

bar vertebra. To locate these sacral foramina we first take a point just external and very slightly above the sacral horn. This is the location of the fifth sacral foramen. Next we take a point 1 cm. internal and 1 cm. below the posterior superior iliac spine. This should give the location of the second sacral foramen. On a line between these two points the third and fourth sacral foramina may be located, the second and third being 2 cm. apart while the remaining two spaces are each 1.5 cm. This procedure should be carried out bilaterally. After some practice on the cadaver, this procedure may be carried out very successfully, and there is no block anesthesia that gives more brilliant results when administered successfully. Stoffel reports 413 cases over a period of nine years with no untoward effects.

"Spinal anesthesia," in the words of Labat, "is block anesthesia par excellence." It is true, many fatalities have accompanied spinal anesthesia, but the recent development in the technique of administration has made it a comparatively safe procedure. The method introduced into this country by Labat has been used by him for the last three years with no fatalities. The great majority of cases injected by him were cases in which general anesthesia was distinctly contraindicated. Guibal in 3,000 cases reports one death. Meriel and Leferbore reported 1,000 spinal anesthetics with no mishaps. Morrison reported 11,000 with excellent results. Jeanbrau and co-workers tested urine in twenty-five patients before and for three days after with various anesthetics. The alkaline reserve was reduced in all except those with spinal anesthesia. Ranucci of Rome was unable to find anything indicating injury to the liver or kidney in sixty-seven cases under spinal anesthesia. He believes injury from this method of anesthesia is so very slight and transient compared with general anesthesia by inhalation that in all cases of liver and kidney pathology spinal anesthesia is preferable. Col. Cabot reported 180 amputations of the thigh in the war area. Ninety of these were performed under ether anesthesia and ninety under spinal. The mortality rate was 50 per cent lower in those done under spinal than those done under ether anesthesia.

During acute shock or following excessive hemorrhage, spinal anesthesia is not advisable on account of sudden lowering of blood pressure. Blood transfusion will usually render the condi-

tion suitable for spinal anesthesia following hemorrhage. Many hysterectomies, prostatectomies and bladder operations give better results under spinal than any other form of anesthesia. These operations may be done under combined "sacral block" and infiltration of the abdominal wall, but this is a rather extensive process and will no doubt result in some shock to the patient of low vitality. There is usually a marked lowering of blood pressure, due perhaps to the dilatation of the splanchnic vessels. This is only transitory and there is usually a return to normal in a few hours. Low injections to some extent overcome this objection. For the operations above mentioned, injection between the fourth and fifth lumbar vertebrae is very satisfactory. A hypodermic, consisting of 1 grain Spartein Sulphate, 4 grains caffeine and one-sixtieth grain strychnine sulphate may be given simultaneously with the spinal injection, or at least held ready for use if needed.

The French have long prepared novocain for this purpose. This has been well standardized and prepared in ampules containing .10 and .12 gm. The ampules may be sterilized by passing through a flame. By filing on one side, the top of the ampule is broken off and the powder is dissolved in spinal fluid.

Technique.—Spinal puncture is done in the ordinary way, with the patient in a sitting position. A few drops of fluid are allowed to escape to be sure it is clear. The ampule is filled with the fluid to dissolve the novocain. A spare needle is used on the syringe to draw the fluid from the ampule. The syringe is then attached to the spinal needle and fluid equal to the amount already in the syringe is drawn out. Half of the amount in the syringe is then injected, and again the fluid drawn out. This process is kept up until the fluid has been withdrawn and reinserted five or six times, when the last contents of the syringe is injected. The needle, attached to the syringe, is then quickly withdrawn. The patient is allowed to lie down and the operation may be begun almost immediately.

Syncope is a rare complication if the injection is done with great care, but if it does take place artificial respiration may have to be resorted to. There is no adrenalin used in spinal anesthesia. The novocain acts here on the nerve tissue directly and we have no blood vessels to control. By this to and fro movement during the injection

tion a wave motion is set up in the spinal fluid. This motion is toward the periphery and carries the novocain in contact with the nerve tissue where it is absorbed. If we succeed in getting most of the novocain absorbed at this point, provided the injection has been made low, we rarely have any respiratory difficulty. Vomiting during the operation is a frequent complication. This may be remarkably well controlled by shutting off the patient's nostrils and compelling him to take deep respirations through the mouth.

Cases in which spinal anesthesia was indicated:

No. 1—Patient, age 35 years. Advanced pulmonary tuberculosis. Pregnant three months. Hysterotomy indicated. Vitality of patient necessarily very low. General anesthetic contraindicated. Hysterotomy done under spinal anesthesia. Novocain solution was diluted somewhat higher than usual on account of lowered vitality of patient. Patient experienced some pain during the operation. Systolic blood pressure dropped 20 mm. during the operation, but was back to normal three hours later. Following operation, patient showed no evidence of shock and apparently no setback of any kind from the effects of the operation. No. 2—Patient, aged 75, showed marked senile changes. Quite a marked arteriosclerosis. Kidney function (P.S.P.) 30 per cent. Blood urea high. Two ounces retention. Difficulty starting urine. Prostatectomy done under spinal anesthesia. Anesthesia perfect. Patient experienced no pain whatever during operation and no evidence of shock following it.

The contraindications to general anesthesia in these cases are self-evident. Any other form of block or local anesthesia would be rather extensive. The low vitality of the patients made any extensive process contraindicated. Adrenalin was contraindicated in case No. 2.

Conclusions.—The highest degree of safety and the best ultimate results for the patients is the aim of the general surgeon. With this aim in view, ether should be eliminated or reduced to a minimum in cases complicated by well marked pathology of the lung, liver, kidney or adrenals. It should be used cautiously in all cases of infection or suspected infection of the respiratory tract. In the aged, those with high blood pressure, marked acidosis, acute infection or pronounced lowered vitality it should be replaced by local or regional anesthesia. Gas-oxygen in the hands of an experienced anesthetist, is less objectionable than ether in the above mentioned types of cases, but should be used with great caution, or replaced by local or regional in the same cases. As Bartlett has well said: "Local or regional anesthesia is not always good

for a public clinic. A hypercritical audience usually demands spectacular work. To meet this demand the operator may be induced, to some degree, to disregard the welfare of the patient and adopt the method most appealing to the audience. The spectacular work with this form of anesthesia is not always evident in the operating room, but frequently becomes evident on observing the patient during the post-operative period." With many of the extreme cases the degree of risk may be greatly reduced by the successful administration of one of the various forms of regional anesthesia.

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DIVERTICULITIS OF THE COLON*

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For many years, the medical profession has been familiar with congenital diverticuli of the alimentary canal, but it is only since 1898, when Graser described diverticulum formation in the lower bowel and showed that such cases were not uncommon, that we have become familiar with the acquired diverticuli. It is with the so-called acquired type that we are interested in this study.

Previous to 1898, the late Dr. C. A. Wheaton and I occasionally encountered cases of dense infiltration and inflammatory changes in the ascending, transverse, and descending colon, the etiology of which we were at a loss to explain, although Virchow in 1853 had described pathologic changes of the descending colon and sigmoid, but failed to ascribe to the diverticuli etiological importance. In the cases encountered by Dr. Wheaton and me, there would occasionally be an abscess, but, in several instances, nothing was discovered except a densely infiltrated bowel. Without exception they were all drained, and I can recall no fatality following such operation, a fact of some significance, which will be discussed later on in considering treatment.

Fischer in 1901 and Beer in 1904 added much to our enlightenment of the etiology of diverticulitis, but to W. J. Mayo must be given the credit for establishing this condition as a clinical entity. Mayo, Wilson and Giffin, in a paper on "Diverticulitis of the Large Intestine," were the first to record the actual demonstration of the pathology of diverticulitis from specimens removed from the living subject. In 1908, Telling analyzed the reported cases and classified its pathologic changes and clinical results. McGrath's article on etiology and pathogenesis of the colon diverticulum, coming later, is of special interest and great value. While most common in the transverse and descending colon, these diverticuli may occur in any portion of the large bowel. In McGrath's series of thirty-two cases, twenty-seven occurred in the descending colon and sigmoid, two in the rectum, one in the transverse and hepatic flexure,

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and one at the anal ring. The location in my series of ten cases was one in the cecum, two in the ascending colon, one in the transverse, and the balance in the descending colon and in the sigmoid. In one case the location was not determined.—a child of ten with a fecal fistula in the bladder and a large pelvic abscess. The child was a poor operative risk. The operation was performed in a farm house and drainage was done under partial anesthesia.

The disease is essentially that of middle or past middle life, although many cases are reported in younger persons, the youngest in the literature being three years of age. It occurs about three times as often in men as in women. From my own experience half have been men and half women, and the ages have ranged from ten to sixty-three years.

Etiology.—When one reads the literature, one is constantly reminded that fat and chronic constipation are the two most important etiological factors. In our series neither of these conditions has been present in the history of the cases. None of them was abnormally fat. On the other hand, most of them were below normal weight. One author, Roberts, goes so far as to state that every pot-bellied individual over sixty should be under strong suspicion of having multiple diverticuli of the colon, particularly if there is a long history of constipation and lower abdominal discomfort.

As a matter of fact, when one studies the reports of cases in the literature, one may be easily led to the conclusion that the etiological factors are not yet determined and, in my own opinion, I am not convinced that this condition is always acquired and that it is not more often congenital than acquired. Drummond concludes "that they are probably due to a deficiency of the non-striated muscle tissue of the individual," as is shown by their tendency to occur in "various viscera of the same individual"—an argument in favor of their congenital origin. He further states that the sacculi may occur in any portion of the colon, but the pelvic colon is by far the most common site, and that the sacculi make their appearance almost invariably at one point in the colon wall, namely, between the mesenteric and lateral longitudinal bands. After pressing through the muscular coats they follow the sheaths of the vessel toward the mesentery. The blood vessels of a normal colon may be said to predispose to sacculi to the same

extent as the spermatic cord does to an inguinal hernia.

Pathology.—The so-called acquired diverticuli are almost always multiple. Hansman has recorded one case in which there were 400 diverticuli, varying in size from that of a hemp seed to that of a pigeon's egg. In only one of my cases was there a single diverticulum. This was in a girl twelve years and located about 2 inches above the ileocecal valve in the cecum. The condition was really a mucosal hernia, the opening into the intestine being, in most cases, extremely small. When the sacculi push through the muscular coat of the intestine at a weak point it is covered only by peritoneum and mucous membrane. It can readily be seen that such a sacculi easily harbors pathologic germs, as well as fecoliths, a condition predisposing at all times to inflammation, acute gangrene, perforation with abscess, or peritonitis, and not uncommonly there is found associated with diverticulitis a vesico-colic fistula.

Several cases of metastatic suppuration are reported in the literature. In a recent case reported at the Miller Hospital, a young man of twenty-two had been treated for three weeks for an acute articular rheumatism. He was sent to the hospital on account of a pelvic peritonitis, with a possible appendix in the pelvis. Operation demonstrated a normal appendix, and a much thickened and adherent sigmoid which, after retro-peritoneal drainage, went on to resolution. The rheumatic symptoms entirely disappeared after operation. In this case there was a peri-sigmoiditis, undoubtedly due to the inflamed diverticuli and the partial obstruction of the sigmoid. As a result of such an inflammation of the wall of the sigmoid and its surrounding structures, there may yet be produced a stricture which will require resection for its relief.

Adami and Nicholls call attention to frequent association of chronic pulmonary affections in old people having diverticulitis. This has not been borne out by my experience, nor can I find in the literature any reference to pulmonary affections associated with diverticulitis other than metastatic abscesses. Ulceration of an infected diverticulum may cause hemorrhage of the bowel. In one of my cases operated in 1909 the patient had hemorrhages before the operation and at the present time still has occasional bleeding from the

bowel every two or three months. Otherwise she is in perfect health and able to do all her housework for a large family. She is now forty-three years of age. This case was drained through the laparotomy wound.

Another case in which resection of the bowel was necessary had a history of repeated hemorrhage. Pathological examination in this case showed four diverticuli. The mucous membrane in one was markedly ulcerated. C. H. Mayo has called attention to the fact that a diverticulitis low in the sigmoid or in the rectum is the cause of high rectal fistulas.

Symptomology.—Multiple diverticuli of the large intestine are not infrequently discovered at autopsy with no history of symptoms produced by their presence. When one or more diverticuli become infected the symptoms are exactly those of an acute, sub-acute, or chronic appendicitis, and almost all of the so-called cases of left-sided appendicitis, an extremely rare condition, are really diverticulitis of the sigmoid. While the reverse may be true in some instances, almost all cases give a history of obstinate constipation associated with abdominal pain, more or less severe. In those cases situated in the sigmoid where there is a hyperplastic, extra mucosal inflammation, there is often rigidity and a palpable tumor to be felt. Frequently the tumor disappears, only to reappear again in a few days. In a recent article by Masson of the Mayo Clinic, he states that 79 per cent of his cases had attacks of pain, and that 34 per cent had recurrent attacks of pain, tenderness, and rigidity with tumor in the left side.

Bladder irritability is a later symptom and should always arouse suspicion of diverticulitis of the sigmoid when no other cause for the irritability can be found. In one of my cases, a man sixty-three years of age and slightly over weight, the first symptom other than obstinate constipation was sudden, acute pain, followed by collapse. Operation within a few hours demonstrated a large perforation of the sigmoid and beginning general peritonitis.

In all cases of obscure abdominal pain, especially in the left side, whether in patients past middle life, fat, or thin, unless the cause is definitely determined, diverticulitis should be suspected.

Diagnosis.—It is generally conceded that one must differentiate diverticulitis principally from sigmoiditis, tuberculosis, syphilis, actinomycosis,

inflammatory pelvic diseases, and left-sided or transposed appendicitis. While the sigmoidoscope is of little aid in the diagnosis of diverticulitis, it is of the first importance in the diagnosis of malignancy, tuberculosis and sigmoiditis, as well as actinomycosis.

Roentgenology is of the greatest importance in differentiation. Carman of Rochester, George and Leonard of Boston, have demonstrated its great possibilities. In fact, positive findings with roentgen rays make differentiation easy, while negative x-ray findings are often equally important. Oftentimes exploratory operation is not only justifiable but imperative.

It is well to call attention to the fact in this connection that diverticulitis is frequently followed by superimposed, malignant change. Some authors give as high as 14.5 per cent in which malignant changes were found at the time of operation. Masson calls attention to the fact that carcinoma and diverticulitis may be present in the same individual, and that the carcinoma may act as a cause for the diverticulitis. In acute diverticulitis leukocytosis is always present to a marked degree. In differentiating from cancer, it is well to remember that hemorrhage from the bowel is almost a constant symptom, while in diverticulitis it may be occasionally found. Patients suffering from cancer usually show more or less cachexia. Cachexia is rarely seen in diverticulitis. Erdman stresses the difficulty of diagnosis even at operation in the case of a woman of fifty, operated upon for fistula of the bladder. A large tumor of the sigmoid was found and a specimen sent to the laboratory for diagnosis. Carcinoma was reported; extensive resection was done and an artificial anus was established. On further observation the diagnosis was found to be incorrect, a diverticulitis being the cause of the tumor and fistula. The patient died in twelve days from uremia.

In one of my cases, a woman fifty-five years of age, in whom a resection was performed, a diverticulitis was discovered only after a careful pathologic examination.

Treatment.—From the foregoing, it must be obvious that one must be guided in the treatment of diverticulitis by the severity and importance of symptoms and the history in the individual case under consideration. Dudley Roberts stresses the importance of medical treatment and claims that it is extremely satisfactory. He advises laxatives, vegetable diet, daily doses of mineral oil and agar,

small injections of warm water, large doses of bismuth weekly by enema or by mouth, injection of hot gelatine, 8 ounces of 10 per cent solution introduced into the sigmoid at a temperature of 120 degrees, antispasmodics, luminol, and atropin three times a day. He claims that surgery is only indicated for sequelæ. In chronic cases located in the sigmoid, recurrent in character, such a regime might be advocated where the patient is under constant surveillance. Otherwise, I should hesitate to take the responsibility for medical treatment in any given case, except perhaps in cases of very obese individuals in whom an excision of the colon is an extremely formidable and dangerous undertaking. Recognizing the possibilities of an acutely inflamed diverticulum, my judgment would lead me to operate as soon as the diagnosis was sufficiently certain to justify operation. Any excision of a single, or of several diverticuli, can be as safely performed as that of excision of the appendix. In the hyperplastic inflammatory forms of multiple diverticuli and small abscesses, drainage is all that is necessary. Where a vesical fistula is formed the operation is more formidable and will require a possible resection of the sigmoid, as well as excision of a portion of the bladder wall. In cases of obstruction, if the conditions found justify the attempt, excision and end-to-end anastomosis will be the proper procedure. If conditions are such that the danger of primary resection is too great, a colostomy above the diseased area is advisable and a resection may be made later when the infection has subsided. If the disease is so located that a Mikulicz three-stage operation can be performed, it may seem advisable, as the mortality from this operation is much lower than that from primary resection.

Again, I would say that the surgical treatment in any given case must depend upon the severity of the symptoms, the condition of the patient, and the judgment of the operating surgeon. From my own experience, and from a careful review of many cases reported, I am convinced that simple drainage in most cases will be followed by cure. In three of my cases resection seemed necessary, but drainage resulted in cure.

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DISCUSSION

DR. GUSTAV SCHWYZER, Minneapolis: Within the last year I have had two cases of diverticulitis under my observation. The one point that Dr. Rogers emphasized, namely, the obesity, struck me as being very marked, especially in the one case, less though in the case of a man who came to the hospital with an acute belly and on whom the diagnosis of diverticulitis was made a year ago. This diagnosis was confirmed at Rochester, Minn., and reconfirmed by us during operation. Within the past year no acute disturbance of the bowels was ever noticed. The patient came to us first with a slight pain in his left lower abdomen. In that region we palpated a resistance of the size of the large gut, not movable, gradually disappearing toward the depth.

The x-ray picture showed a marked constriction of the sigmoid flexure. There was only very little barium that went through the strictured area. Digital examination by rectum, as well as by proctoscope, did not reveal anything. The patient had a bowel movement every day, using salts and mineral oil, and was never confined to bed.

When the man with an acute belly came to us the pain was rather more in the right lower quadrant of the abdomen. The whole abdomen was rigid and somewhat bloated. When the abdomen was opened a great amount of turbid fluid escaped and we found an appendix which offered some difficulty in its removal as it lay two-thirds below the brim of the pelvis. We were forced to eviscerate the intestines, free the different loops from each other, as there were numerous membranous croup-like deposits between them. We washed out the peritoneal cavity with saline solution, and next reached for the sigmoid flexure. There we found a tumor which appeared to be a solid mass lying over the brim of the pelvis, absolutely immovable. The abdomen was closed and the patient made a speedy recovery. The wound healing was complicated by a late abscess in the wall.

The other case which we had under observation about two months ago was in a woman thirty-seven years of age. I was consulted on account of severe pain in the right hand side of the abdomen. It looked to us that we had to do with an intestinal proposition. Opening up the abdomen in the region of the cecum we found a growth which felt to the hand just like a hard carcinoma of the bowel. It was astonishing to find, though, that the growth belonged to the sigmoid flexure which became adherent to the parietal peritoneum of the right side. We eviscerated the tumor and made a Mikulicz operation as for carcinoma. The growth was removed and it proved to be a diverticulitis. Today patient looks very well and has only a very small fistula, which is rapidly closing.

DR. JOHN T. ROGERS, St. Paul (closing): I am a little disappointed that there was not more general discussion of this paper, because the subject is certainly one of very great importance.

In the obscure abdominal pains we use every effort to find out the cause of the patient's illness and often overlook the fact that diverticulitis is a distinct disease, and one which should be looked for in all these cases. An inflamed diverticulum is a focus for infection, for rheumatic endocarditis, and for those things for which we usually take out the tonsils and drain a lot of sinuses, and overlook the fact of the possibility that there is an inflamed diverticulum in the intestinal tract somewhere which is the seat of our trouble. This was demonstrated in the case which I reported. This boy was treated for rheumatism for three weeks.

One point I want to stress again is the necessity of doing as little as possible in those cases that come in with an acute diverticulitis. Whether the diagnosis is made at operation or before, the operative treatment should be, I think, very largely that of drainage and waiting.

In one case I had four distinct inflamed diverticula with an abscess around each one of them, and on opening the abscesses a fecolith was evacuated, and drainage was all that was necessary, and it looked as if the whole ascending colon would have to be resected.



EDWARD STARR JUDD, M. D.,
ROCHESTER

President of the Minnesota State Medical Association, 1923

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No. 1

EDITORIAL

Basic Medical Practice Act

With our representative form of government it is incumbent on each element of the body politic to interest itself in the public welfare. In accord with this policy the Legislative Committee of the Minnesota State Medical Association is about to introduce in our state legislature the so-called Basic Medical Practice Act which has been carefully prepared by a special committee of the Association. We are publishing the final draft of the bill for the information of the profession and each member of the Association is urged to point out the need for this Act to his representatives in the legislature. The prime object of this bill is to require of every individual who proposes in the future to care for the sick, be he doctor of medicine, osteopathy or chiropractic, that he pass an examination in anatomy, physiology, chemistry and pathology to be held by a special board to be appointed by the governor or satisfy such board as to his qualifications in these basic sciences. This examination is to be in addition to the examinations which will continue to be held by the several existing state boards with the provision that the existing boards may accept recommendations of the new board and, while not affecting those already in

practice, is designed to provide for public protection in the future. The interest of the public is the sole object.

It is of great importance that all members of both Senate and House be familiarized with this bill and that they appreciate the need for such a board to protect the public from those who in the future will practice the art of healing. Let us get behind our Legislative Committee and each do his part to put an end to the deplorable situation in our state where any Tom, Dick or Harry can take a few months' training, call himself a doctor and maltreat the sick.

Following is the proposed Basic Medical Practice Act in full:

Bill for an act defining the practice of healing, creating a board of examiners in the basic sciences and establishing its powers and authority.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

Sec. 1. Definitions. For the purposes of this act the practice of healing is defined as follows:

A person practices healing who shall offer or undertake, by any means other than mental or spiritual, to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition. The practice of healing includes the practice of medicine and surgery, osteopathy, chiropractic and any other cult, system, or type of healing other than mental or spiritual, that now is recognized or hereafter may be recognized in this state, but does not include the practice of dentistry nor the diagnosing, treating, operating or prescribing for any disease, lesion, pain, injury, defect, deformity, or physical condition of the human teeth, alveolar process, gums, or jaws, or the replacement of teeth by artificial ones, or correcting the malpositions thereof. The sciences essential to the practice of healing are defined as Anatomy, Chemistry, Pathology, and Physiology, hereinafter called the basic sciences.

Sec 2. Board of Examiners in the Basic Sciences.

There is hereby created and established a board to be known as the State Board of Examiners in the Basic Sciences, hereinafter called the board.

Sec. 3. Appointment of Board by Governor and Qualifications of Members.

Within thirty days after the passage of this act, the Governor shall appoint the state board of examiners in the basic sciences, consisting of four residents of Minnesota who shall be appointed for a term of four years or until their successors are appointed, except that, of the first members, one shall be appointed for one year, one for two years, one for three years and one for four years. One member of said board shall be a competent anatomist; one shall be a competent chemist; one shall be a competent pathologist; one shall be a competent physiologist. No

member of said board shall be engaged in the practice of healing.

Sec. 4. Organization and Procedure.

Within thirty days after being so appointed, said board shall assemble and organize by electing a president, vice president and secretary-treasurer. Said board shall have a common seal. They shall adopt minimum standards of preliminary education.

No rule of said board shall discriminate against any school or system of healing. Three members of said board shall constitute a quorum. Said board shall meet on the Third Tuesday of February, March, June, August, September and December in each year and at such other times as a majority of the board may deem necessary. The secretary shall keep a record of all of its proceedings, including a register of all applicants for examination, giving their ages, educational qualifications and the results of their examinations. Said book records shall be prima facie evidence of all matters therein recorded.

Sec. 5. Fee, Examination, Certificate.

Any person desiring to practice healing in this state shall apply to the secretary of said board and pay a fee of ten dollars. The examinations conducted by the board shall be both practical and written and shall be held in the laboratories of the College of Science, Literature and Arts of the University of Minnesota. If a candidate shall attain a grade of 75 per cent or more on all four subjects he shall receive a certificate signed by the president and secretary and bearing the seal of the board. If he fails in one subject he may be re-examined in that subject within one year without further fee. If he fails in two or more subjects he shall not be examined until after the lapse of one year and then only upon re-application and the payment of a further fee of \$10.00.

Said board may issue a certificate to any applicant who presents acceptable evidence of having passed examinations in the basic sciences aforesaid before a legal examining board of another state, the National Board of Medical Examiners, or a foreign country, provided the board of examiners in basic sciences is convinced that the educational and examination standards were as high as those set forth in the rules of said board. Applicants for such acceptance of previous examinations shall pay a fee of \$5.00.

Sec. 6. All fees received by said board shall be paid to the secretary-treasurer, who shall forthwith deposit the same with the state treasurer, to be kept in a separate fund for the use of said board; which fund shall be paid out only on written orders signed by the secretary-treasurer of said board. No expense shall be incurred by said board other than that which may be covered by such fees. The secretary-treasurer shall give a bond in such sum as the board may deem necessary. He shall on or before August first of each year file with the Governor a report of all the receipts, disbursements and transactions of said board for the preceding fiscal year. The members of the board shall be entitled to ten dollars per day and necessary expenses while attending meetings and conducting examinations of the board.

Sec. 7. Certificate required before examination for practice of healing.

No board at present existing or which may hereafter be established for the examination and licensing of practitioners of healing shall admit any candidate to take its examination nor license any candidate by reciprocity nor in any other way until said candidate presents an official certificate of having successfully passed the examinations conducted by the board of examiners in the basic sciences or an official certificate of said board of examiners in the basic sciences accepting the results of a previous examination, as provided in Sec. 5 of this act. Any licensing board may accept the certificate of the examiners in basic sciences in lieu of the examinations in said basic sciences required by law to be conducted by such licensing board.

Sec. 8. Nothing in this act shall apply in any way to any person licensed to practice any system of healing in this state prior to the passage of this act.

Sec. 9. This act is supplementary to existing laws and not a repeal thereof except insofar as this act be inconsistent with any provision of existing laws.

Sec. 10. Said Board of Examiners may revoke any certificate of any person guilty of immoral, dishonorable or unprofessional conduct, but before this is done the holder of said certificate shall have thirty days' notice and after a full and fair hearing of the charges made, by a majority vote of the whole Board, the certificate may be revoked, subject, however, to the right of the holder of said certificate to appeal to the District Court of the proper county on questions of both law and fact.

Sec. 11. Any person violating any of the provisions of this act, or who shall willfully make any false representation to the board of examiners in applying for a certificate, shall be guilty of misdemeanor, and upon conviction shall be punished by a fine of not more than one hundred dollars and not less ten dollars.

Health Magazines

The human animal has ever shown an interest in his own body. The babe shows that interest when he discovers his hands; the schoolboy is full of interest when he sees for the first time the internal organs of some animal; the average grown-up has always had an interest in his body, which today seems on the increase. Most individuals have their own ideas of what is good for their physical health and of what is not and many of their ideas obtained from a variety of sources are of a bizarre and unsound nature.

The demand for medical knowledge is natural and desirable and must be met. Certain dangers, however, accompany the acquisition of a little knowledge. A physician knows better than to attempt to diagnose his own case and most physicians do not even attempt to treat the members of their own families. How much less should the necessarily meagerly informed lay individual attempt to solve his own physical ailments.

Health journals, therefore, should not attempt to make diagnosticians of every one nor should they publish material which is more or less in the theoretical stage of development. Only facts which have gone beyond the theoretical stage and have been well established as incontrovertible truths should be handed out for lay consumption. On the other hand, the secrecy for so long associated with medical practice and typified by the writing of prescriptions in Latin, has largely disappeared and no objection can be offered to the education of every one in facts medical.

Such education has the great value of creating a demand from patients on their medical advisers for the best methods of examination and treatment and thus preventing to a large degree charlatanry on the part of self-styled doctors and healers. The remarkable rise of so-called cults and mental healers only emphasizes the need for education of the public along such lines.

The medical profession, which is not a cult nor sect, but consists of those members of society that have studied the records and experiences of doctors handed down through the ages, are the logical ones to present medical facts to the people, and it is with a great deal of satisfaction that we receive the announcement that the offices of the American Medical Association have arranged to publish a lay health journal to be known as "Hygiea" to appear in April, 1923. This journal is to be first class in make-up, size, and quality of articles, to compare very favorably with the high grade magazines published in this country.

The success of any magazine, financially and otherwise, depends to a large degree on its circulation. Not being a popular priced publication, a wide distribution may be difficult, but with the backing of the profession this should not be insurmountable. We are assured that we will not have to apologize for "Hygiea" and every physician is urged to back this undertaking to the extent at least of having a copy on his reception room table.

There are several privately owned lay journals obtainable at the news-stands, good, bad and indifferent. One of these magazines which has been appearing for several years is distinctly bad in its influence. While emphasizing the value of calisthenics and muscular development, it is distinctly "anti" to several well established medical procedures such as the use of drugs, vaccination, etc.

The spreading of such false ideas largely counteracts any good that such a publication does in calling attention to the desirability of taking care of the human machine.

While Hygiea will meet a definite demand on the part of the intelligent, reading public, there will still be a demand for further lay education which a popular priced, less pretentious publication could meet. It is not felt generally that the time has come when the Minnesota State Medical Association should undertake such a publication, but there is no reason why the Association should not back up the journal of the Minnesota Public Health Association, known as the Minnesota Health Journal, and help develop this lay magazine which is of this character and is already established, being now in its seventh year. Just recently it has been decided to change the name of this publication to the Northwest Health Journal and to expand its field of usefulness beyond Minnesota to include the neighboring states, particularly the Dakotas and Montana. Definite plans have been made to greatly improve the style and appearance of this publication in 1923 and it is hoped to obtain a wide circulation at a very moderate subscription rate. The State-wide Publicity Committee of our Association, of which Dr. N. O. Pearce of Minneapolis is chairman, is endorsing this publication and the support of the profession is earnestly desired. The idea of such a publication was approved by the House of Delegates and the particular method of carrying out this idea left to the Committee. While the Minnesota Public Health Association is an incorporated body, it has on its Board of Directors a group of physicians who are members of the Minnesota State Medical Association and a close relation between the two organizations should exist. It should be noted that the activities of the Public Health Association depend entirely on the sale of Christmas seals—hence the desirability of backing the sale of their seals to the utmost.

St. Paul Clinic Week

The character of medical meetings has changed very decidedly in recent years. Mere presentation of papers and social contact do not provide the greatest good a medical meeting can afford. The great value of bedside clinics by men of recognized ability has recently been emphasized, for instance in the last meeting of the Tri-State Medical Society,

and proved a success. This is the best form of postgraduate training.

The Clinic Weeks of St. Paul and Minneapolis have afforded just this type of meeting and have proven their worth. The visiting physicians can choose the clinics in which they are particularly interested and the symposia present subjects from different points of view. Addresses by visiting outsiders prevent to some extent too great a provincialism.

Whether the time has not come when a similar program in our State meetings should be instituted affords a subject for serious consideration by officers and members of the association.

The St. Paul Clinic Week, a tentative program of which appears elsewhere in this issue, promises to be even more attractive than in preceding years.

The office of the Minnesota State Medical Association is desirous of being of assistance to the profession of the state in furnishing an exchange for information regarding locations for physicians.

This will be a particularly valuable service, especially for the younger members of the profession who are in quest of locations, if every member of the Association will co-operate to the extent of notifying this office where there is need for a physician, or where there is a practice for sale.

No charge is to be made for this service, and only a nominal charge for any insertions desired in MINNESOTA MEDICINE.

OBITUARY

DR. JOHN GILBERT PHILLIPS

Dr. J. G. Phillips, one of the leading physicians of Northfield, Minnesota, died in the Mayo hospital at Rochester, Monday, November 27, following a major operation.

Dr. Phillips had been engaged in the practice of medicine at Northfield for the past fifteen years. He was born in Drumbo, Ont., Jan. 7, 1877, the son of Richard and Sarah Phillips, and came to Marinette, Mich., with his parents when 11 years of age. He attended the Ferris Institute at Big Rapids, Mich., and taught for five years before taking up the study of medicine at Northwestern University.

Graduating from the University in 1905, he spent a year as interne at the Lenox Hospital, Virginia, Minn., and then came to Northfield to begin the practice of medicine in partnership with his uncle, Dr. J. R. Phillips. For several terms, he was the city physician of Northfield and was

also local physician for the Chicago, Milwaukee & St. Paul and the Minneapolis, Northfield & Southern railroads.

Dr. Phillips was married to Miss Nellie Phillips, the daughter of Mr. and Mrs. R. C. Phillips of Northfield, in 1910, and to this union two children, Margaret and Kathleen, were born. Dr. Phillips is survived by his wife and their two daughters. He is also survived by four brothers and two sisters.

DR. CHARLES McHENRY COOPER

Dr. Charles McHenry Cooper of Chatfield died at his home November 23 at the age of 56 years following an illness of two years.

Dr. Cooper was born in Indiana on Dec. 21, 1865, and came to this state when still a boy. He graduated from the Chatfield High School and was later married to Miss Kittie Cole.

He is survived by his widow, three daughters, Frances of Chatfield, Elizabeth, now teaching in New York, and Mrs. D. H. Haven of Chatfield, and by one son, Charles.

Dr. Cooper was prominent in civic affairs in his home community, acting as mayor of Chatfield from 1907 to 1911 and as a member of the school board from 1900 until 1920, when he resigned because of ill health.

DR. D. W. WOODWORTH

Dr. Dempster W. Woodworth of Ellsworth, Wisconsin, died at St. Luke's hospital in Ellsworth, November 29, after an illness of several months. Dr. Woodworth had been a practicing physician at Ellsworth, Wis., for fifty-four years, and at one time represented his district in the Wisconsin senate.

Surviving him are his wife, one daughter, Mrs. J. S. Cooney, 709 Laurel avenue, and three sons, E. D. Woodworth, city editor of the Colorado Springs (Colo.) Gazette; Dr. D. L. Woodworth of Chicago, and F. G. Woodworth, principal of the U. S. Grant school at Sheboygan, Wis.

An elder brother, Dr. M. C. Woodworth, was a prominent surgeon in St. Paul following the Civil war, and another brother, L. D. Woodworth, of Youngstown, Ohio, preceded William McKinley in Congress.

DR. D. W. COWAN

Dr. D. W. Cowan of Sandstone, one of the pioneer physicians of Minnesota, died at the Braham hospital October 12, 1922, following an illness of several months.

Duke Wellington Cowan was born in Charlottesville, Ontario, Canada, November 4, 1861. There he grew to manhood, receiving his education at Winnipeg, where he graduated from the medical college in 1888. Following his graduation, Dr. Cowan came to Minnesota and practiced at Mora for a short time. He then went to Hinckley, where he went into partnership with Dr. E. L. Stephan. While at Hinckley, Dr. Cowan served as physician to the people of Sandstone, and following the Hinckley fire in 1894 he went to Sandstone, where he practiced until the time of his death.

Dr. Cowan was prominent in political affairs of the state and served as senator from his district from 1902 to 1906. He was also a charter member of the Sandstone Masonic lodge.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

ST. PAUL CLINIC WEEK

Headquarters—St. Paul Hotel

Chairman—E. M. Jones, M. D., Lowry Bldg., St. Paul.

Secretary—A. G. Schulze, M. D., Lowry Bldg., St. Paul.

The third annual Clinic Week of the Ramsey County Medical Society, St. Paul, will be held this year Tuesday to Friday inclusive, January 9 to 12, 1923.

Each morning will be devoted to clinics and x-ray and pathologic demonstrations at the various hospitals, conducted by local physicians and surgeons.

A symposium has been arranged for each afternoon to be conducted by local specialists and to be followed by an address by a prominent visiting physician.

The tentative program to be conducted at the St. Paul Hotel is as follows:

January 9—2 P. M.

Symposium on "Mastoiditis," by Drs. C. L. Larsen, J. L. Shellman, C. W. Fogarty, W. H. Hengstler, J. C. Brown.

Address—"Repairs of the Defects of the Face, Congenital and Acquired" (illustrated), by Dr. V. P. Blair, St. Louis.

8 P. M.—Meeting of the Northwestern Association of the Officers of the World War.

January 10—2 P. M.

Symposium on "Complications Arising During Pregnancy," by Drs. J. F. Hammond, L. W. Barry, J. L. Rothrock, C. N. McCloud, A. MacLaren.

Address—"Ulcer of the Stomach and Duodenum," by Dr. E. S. Judd, Rochester.

6:30 P. M.—Banquet for physicians and their ladies to be followed by an address by Dr. Dean Lewis, Chicago.

January 11—2 P. M.

Symposium on "Fractures," by Drs. C. C. Chatterton, Robert Earl, A. R. Colvin, L. E. Daugherty, Wallace Cole.

Address—"The Surgical Removal of Corneal Opacities," by Dr. Meyer Wiener, St. Louis.

Banquet of the Minnesota Academy of Ophthalmology and Otolaryngology to be followed by an address by Dr. Meyer Wiener of St. Louis.

January 12—2 P. M.

Symposium on "Pneumonia," by Drs. J. S. Gilfillan, C. L. Greene, G. K. Hagaman, H. T. Nippert, A. Schwyzer.

Address—"Symptoms and Signs of Aneurysm of the Aorta," by Dr. Campbell P. Howard, Iowa City.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Southern Minnesota Medical Association was held in Mankato on December 4th and 5th, with headquarters at the Loyola Club. Dr. W. F. Braasch, President, presided. The meeting was so arranged that the program was completed in twenty-four hours, which expedited matters and occasioned the mem-

bers a minimum loss of time. Although the attendance was somewhat smaller than usual, there were over two hundred persons seated at the banquet. During the banquet a radio message was received from Dean Lyon of the University of Minnesota, who requested the support of the members in passing the bill, authorizing establishment of a psychopathic hospital at the University. At the business meeting the following resolution was passed:

"In recognition of the valuable services rendered this Association by Dr. Aaron F. Schmitt, the former Secretary-General, it is moved that we thank him and show our appreciation by electing him to honorary membership."

It was voted that future meetings of the Association be held annually and in various cities of Southern Minnesota; also that the meetings be held in April so as not to interfere with the meetings of the State Medical Association.

Much of the success of the recent meeting should be credited to the activities of the Committees on Arrangements and Entertainment, of which Dr. Kemp and Dr. Pratt of Mankato were Chairmen.

The following officers were elected for the ensuing year:

President—Dr. F. P. Strathern, St. Peter.

Vice-President—Dr. C. J. Holman, Mankato.

Secretary-Treasurer—Dr. H. T. McGuigan, Red Wing.

HENNEPIN COUNTY MEDICAL SOCIETY

The annual meeting of the Hennepin County Medical Society will be held in the Library Rooms on the eleventh floor of the Donaldson Building, Monday evening, January 8th, at 7:45 P. M.

The program will consist of the president's address (Dr. A. E. Benjamin) reports of committees, and election of officers, committees and delegates.

Regular monthly meetings of the Hennepin County Medical Society are held on the first Monday in each month, excluding July and August, in its Library Rooms, Donaldson Building, at 7:30 P. M., unless otherwise stated. Noonday lunch meetings are held every Wednesday at 12:30 in the Library Rooms.

All visiting physicians are invited to participate in these meetings. Visiting physicians will obtain all desired information concerning meetings or daily clinics in Minneapolis by calling the Information Bureau of the Hennepin County Medical Society, Geneva 6846, between the hours of 9 A. M. and 5 P. M.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

Plans for the meeting of the Northern Minnesota Medical Association to be held next June at Alexandria were made last month at a session of the board with Dr. C. B. Lewis of Alexandria.

Dr. A. D. Haskell, Alexandria; Dr. C. B. Lewis, Alexandria, and Dr. W. L. Burnap, Fergus Falls, will constitute the program committee. According to present plans the first morning of the convention will be devoted to a golf tournament followed by a children's clinic in the afternoon. The feature of the evening's program will be a lecture by Sinclair Lewis, the author.

CLAY-BECKER COUNTY MEDICAL SOCIETY

The annual meeting of the Clay-Becker Medical Society was held on November 16 in the evening at 8 o'clock at the Comstock Hotel, Moorhead, Minn.

The following officers were elected:

- Dr. G. L. Gosslee, President, Moorhead, Minn.
 Dr. G. G. Haight, Vice President, Audubon, Minn.
 Dr. J. H. Heimark, Secretary-Treasurer, Moorhead, Minn.
 Dr. B. T. Bottolfson, Censor, Moorhead, Minn.
 Dr. F. A. Thysell, Delegate, Moorhead, Minn.
 Dr. O. O. Larson, Alternate, Detroit, Minn.

CENTRAL NEUROPSYCHIATRIC ASSOCIATION

At a meeting of the American Medical Association in St. Louis, in May, there was organized the Central Neuropsychiatric Association. Dr. Peter Bassoe of Chicago was elected president; Dr. Arthur S. Hamilton of Minneapolis, vice president; Dr. Carl F. Menninger of Topeka, Kansas, secretary-treasurer; and Dr. Ernest Sachs of St. Louis, councillor.

There is no doubt but the formation of the new association is one of the most important events in the history of Western Neurology. It is bound to be a great stimulus to our men, whose work is already believed to compare favorably with that done in any other section of the country.

The first meeting occurred at Rochester, October 21st. The session began at 8 A. M., the morning being devoted to neurological surgery, the afternoon to papers and clinics. After a very enjoyable luncheon tendered to the association by the Neurological Department of the Mayo Clinic, a business meeting was held. Adjournment was then made to the Mayo Clinic Assembly room, where the following interesting program was given:

1. Experiments on the Etiology of Epidemic Hiccup.—Dr. Edward C. Rosenow.
2. Encephalitic Epidemics.—Dr. Charles R. Ball.
3. A Case of Left Frontal Brain Abscess Simulating Tuberculous Meningitis.—Dr. Ernest M. Hammes.
4. Observations on the Reaction of Neurosyphilis to Treatment.—Dr. John H. Stokes.
5. Facial Paralysis Associated with Periodic Facial Edema.—Dr. Walter D. Sheldon.
6. A Case of Infantile Progressive Spinal Muscular Atrophy (Werdnig-Hoffman type) with Necropsy Findings.—Dr. Joseph C. Michael.
7. Tumors Involving the Fourth Ventricle of the Brain.—Dr. Harry L. Parker.

Dr. Bassoe's address at the association dinner was a very happy account of the early days of neuropsychiatry in the West—full of interesting incidents and illuminated with humor.

Among other prominent neurologists present were Dr. Hugh T. Patrick of Chicago, Dr. Albert Barrett of Ann Arbor, and Dr. A. T. Mathers, head of the Psychopathic Hospital at Winnipeg. Dr. Patrick made one of his characteristically pithy and entertaining speeches at the dinner, in the course of which he accused the Mayos of having put Rochester on the medical map in such letters that visiting celebrities from abroad passed without stopping through

New York and Philadelphia, barely halting in Chicago, on their way to Minnesota. He paid a deserved tribute to Dr. Adson of Rochester, saying that neither in this country nor in Europe had he seen his skill in neurologic surgery surpassed.

The Neurological Department of the Mayo Clinic left nothing undone to make the occasion profitable and enjoyable to the visiting neurologists. The latter were much impressed not only with the social amenities of the occasion, but also with the scientific spirit and neurological alertness of their hosts.

The following were elected officers for the current year: President, Dr. A. S. Hamilton, Minneapolis; vice president, Dr. L. G. Lowry, Iowa City, Iowa; secretary-treasurer, Dr. Karl A. Menninger, Topeka, Kansas.

RAMSEY COUNTY MEDICAL SOCIETY

Dr. E. G. Sterner was elected president of the Ramsey County Medical Society at the annual meeting Monday night at the Society's headquarters in the Lowry Building. Other officers elected are Dr. C. S. Larsen, vice president; Dr. E. M. Hammes, re-elected secretary and treasurer, and Dr. C. D. Freeman, trustee of the building fund.

The Society voted to instruct Ramsey County delegates to the annual convention of the state association, to be held next October in St. Paul, to vote against the established custom of selecting state presidents successively from St. Paul, Minneapolis, and an outside community. By departure from this procedure many physicians from outside the Twin Cities would be given opportunity to head the state body.

AMERICAN X-RAY SOCIETY

The Central Section of the American X-Ray Society will hold its mid-winter meeting in Louisville on Saturday, February 24, 1923, for one day, including an evening session. All members of the Minnesota State Medical Association are invited and those interested in x-ray work are urged to attend.

Officers—E. C. Ernest, St. Louis, Mo., president; John T. Murphy, Toledo, Ohio, first vice-president; B. R. Kirklin, Muncie, Ind., second vice-president; D. Y. Keith, Louisville, Ky., secretary.

COMMUNICATIONS

New Haven, Conn., Nov. 24, 1922.

To the Editor:

The undersigned is desirous of obtaining information regarding the prevalence of Infectious Jaundice in your State.

The disease is non-reportable and information regarding its prevalence cannot therefore be obtained from Boards of Health. I shall be grateful for any reports of outbreaks which your readers may care to send me.

GEORGE BLUMER, M.D.

195 Church St.,
 New Haven, Conn.

EDITOR'S NOTE: Communications to the above query should be addressed directly to Dr. George Blumer.

December 6, 1922.

To the Editor:

I am endeavoring to make a complete study of the distribution of human actinomycosis in this country. The number of cases reported in the literature is surprisingly small, and I know that the disease is not so rare as is sometimes thought. I shall greatly appreciate hearing directly from anyone who has had experience with this disease, and desire to know concerning case histories the following: age, sex, occupation, residence, state in which the disease was contracted, location of lesion, duration of symptoms, and any special points of interest connected with the treatment, outcome of the disease, or necropsy findings.

A. H. SANFORD, M.D., Mayo Clinic,
Rochester, Minnesota.

OF GENERAL INTEREST

Dr. A. A. Meyer of Melrose recently returned from Chicago, where he attended clinical meetings.

Dr. C. M. Pierson of Wheaton was elected coroner of Traverse County at the election held in November.

Dr. E. J. Nelson, formerly of Minneapolis, has become associated in the practice of medicine with Dr. C. P. Nelson at Owatonna.

Dr. E. R. Sather has disposed of his medical practice at Spring Valley and is now located at Alexandria, where he took over the practice of Dr. E. R. Swanson, December 20.

Dr. J. Reger has moved to St. Hilaire, Minnesota, where he will practice medicine. Dr. Reger succeeds Dr. F. N. Bjerken, who is now taking postgraduate work in the east.

Dr. and Mrs. Karl E. Kretzchmar of Munich, Germany, have taken up their residence in Red Wing where Dr. Kretzchmar is to be associated with Drs. Claydon, Cremer and McGuigan in their medical practice.

Dr. W. E. Browning of Caledonia returned from a hunting trip in northern Minnesota the first of December. Dr. Browning's prowess as a hunter was shown in the fact that he bagged a deer the first morning in the woods.

M. Emile Coué of Nancy, France, is to arrive in New York in January for a two weeks' visit in this country. The citizens of New York, Washington and Cleveland are to learn first hand how to institute self induced auto-suggestion for the cure of all ills the flesh is heir to.

Dr. J. C. Michael of Minneapolis read a paper on "Histopathologic Findings in a Case of Wernig-Hoffman Paralysis," at the meeting of the Minnesota Pathological Society held in Minneapolis, December 19. Dr. J. C. McKinley and Dr. W. A. O'Brien also appeared on the program.

A meeting of the Minnesota-North Dakota State Conference of the Catholic Hospital Association of the United

States and Canada was held in Rochester on December fifth and sixth. Dr. H. B. Sweetser of Minneapolis, Dr. E. L. Tuohy, Duluth, and Dr. Charles H. Mayo of Rochester were among the speakers on the program.

Bequests to three Duluth institutions were included in the will of the late Dr. Nicholas L. Linneman. The will provided that \$10,000 be expended in the construction of an infirmary for children cared for at St. James orphanage; \$8,000 in equipment in the new addition to St. Mary's Hospital; and for the expenditure for such amount as may be necessary in establishing an infirmary at St. Ann's home for the aged.

The National Board of Medical Examiners announces the following dates for its next examinations: Part I, February 12, 13 and 14, 1923; Part II, February 15 and 16, 1923. The fees for these examinations have been continued at the reduced rate for another year. Applications for these examinations must be forwarded not later than January 1, 1923. Application blanks and circulars of information may be obtained from the Secretary of the National Board, Dr. J. S. Rodman, Medical Arts Building, Philadelphia, Pa.

At its last meeting the Public Health Council of the State Department of Health adopted a resolution requiring that after January 1, 1924, public health nurses appointed by county and municipal authorities shall possess the following qualifications:

(1) They shall be not less than 21 years of age at the time of appointment.

(2) They shall be registered nurses.

(3) They shall have completed a course in public health nursing approved by the Public Health Council.

Scattering reports from various Community Chest campaigns held this fall show pretty uniformly successful results, except in the northwestern states.

Cleveland, with the enormous quota of \$4,500,000, included in which was a half million dollar reserve or contingent fund, went slightly over the top—a really remarkable record for a city of 800,000 souls. Denver, which has had a partial federation for many years, held its first true Chest campaign this fall and went \$25,000 over its quota of \$609,000. Akron, Ohio, with a quota of \$350,000, went \$359,000 and expects that the total will run up to \$370,000.

Detroit with a quota of about two and a quarter million was only \$70,000 short.

Perhaps the most outstanding victory was the Philadelphia campaign for \$2,500,000. In its first experience, a year ago, it fell about 50 per cent short, owing to strenuous opposition from several denominational groups. This year, with Edward Bok, well known editor and author, as campaign chairman, the campaign just made \$2,500,000.

In the Northwest, results have not been quite so favorable. Milwaukee closed \$85,000 short on a quota of \$538,000. Minneapolis did not quite make \$1,000,000, on a quota of \$1,310,000, and Duluth fell a little short of its quota of \$250,000. In St. Paul a goal of \$675,000 was set and \$561,000 pledged.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

MEETING OF OCTOBER 11, 1922

DR. A. E. BENJAMIN reported a case of acute appendicitis in a man of 80 years.

Mr. A. A., age 80, old soldier. Family history good. Personal history good until first of month.

Present illness: October 1st had acute abdominal pain but up and around, some nausea and vomiting on third. Called a physician that day. October 4th small mass found in right pelvis. Temperature 100; pulse 100-115, intermittent and irregular.

Physical Examination: Apparently well-nourished and general condition good. Patient suffering very little pain excepting on examination. Considerable resistance to pressure in right iliac region. Mass found in this area. Heart very irregular and rapid.

Laboratory: October 4th, leucocyte 15,000. Morning of the 5th, 16,600. Urine showed albumin and few casts. P. S. P. 33 per cent.

Operation: October 5th, local anesthesia and gas. Oblique incision. Appendix not readily reached. On account of age and condition of heart did not warrant lengthy operation, therefore appendix was not removed. About two and one-half ounces of creamy pus were evacuated. Two three-quarter inch drains inserted in region of abscessed cavity.

Treatment: Glucose and soda and bromides by bowel. Hypodermics of morphin and atropin first and second day for pain.

Convalescence: Patient very restless, but kept fairly quiet with bromides. Second day heart irregular and weak. Third day patient somewhat better. Considerable discharge from abdomen, less distention. No vomiting. Taking considerable water. Proctoclysis not readily retained. Bromides internally and digitalis evening of third day. On fourth day patient suddenly experienced difficulty in breathing. Temperature, 103-104. Died in a few hours after onset of pulmonary trouble.

Remarks: Patient evidently improving after operation, but died suddenly from some unknown pulmonary complications. No post-mortem obtained. Patient not operated upon immediately because of bad condition of heart and kidneys.

DR. MANN: Wasn't this pulmonary embolism?

DR. BENJAMIN: It may have been, but we could not get a post-mortem.

DR. H. P. RITCHIE reported cases of unusual combinations of congenital cleft lip and palate.

The first cases are twins. This is by no means an infrequent occurrence. The familial incidence is quite interesting. I have had under observation three pairs of brothers and two pairs of sisters; one father with a post-alveolar cleft and his tenth child with a similar cleft; also one aunt and niece.

These are Louise and Lillian, born in Duluth February 26, 1921. Brought to the University Hospital when about one month old and found that they both occur in the same group, viz., Group III, Alveolar Cleft, according to the classification which Dr. John Staige Davis and I have worked out. These are unilateral cases. Louise had a cleft in the alveolar process of over three-eighths of an inch, and Lillian had a cleft of over one-fourth of an inch. Louise has a complete cleft lip and Lillian an incomplete cleft lip. I operated on Louise March 28, 1921, putting in the Brophy plates, which were left on for about a month, when they had to be removed on account of malnutrition of the child. The lip was done about a month later. Lillian was operated upon at the same time by doing only the lip, and the process cleft was closed in three days following this procedure. Lip pressure closes the alveolar process cleft if we can get them early enough and the cleft is not too wide.

Our plan of record is based on the condition of the alveolar process. If this is normally closed we have two groups, namely, Group I, Pre-alveolar Cleft, indicating a dissociated cleft lip; Group II, Post-alveolar Cleft, indicating a dissociated cleft palate; and Group III includes all cases in which the process is cleft and these are then recorded as Group III, Alveolar Process Cleft. In this group



Figure 1. Lillian. Group III Alveolar cleft right complete. Lip complete before operation.

the cleft lip and cleft palate are usually associated but not always, as there may be present a normal palate with cleft process and lip. The acceptance of this plan also requires the disuse of the term "harelip." This plan then gives us the opportunity of describing separately the lip, process, and palate instead of trying to record the case by describing the anatomical form or degree, which is impossible to do with any degree of uniformity.



Figure 2. Lillian. After lip and process closure.

Case 2. Median cleft lip and palate. This cleft is of rare occurrence. Several of the cases reported appear to me as really bilateral clefts in which the pre-maxilla is rudimentary or congenitally absent.

This case is recorded as a Group III, Alveolar Cleft Median, with an incomplete lip and bilateral palate. In Dr. Brophy's classification of the fifteen forms of palate cleft, the condition in this case is not represented, i. e., a complete palate cleft associated with a complete cleft of the alveolar process.

This is of great interest from the standpoint of embryology.

DR. SCHLUTZ: You spoke of removing the plates because of the malnutrition of the child. Is there any objection to tubal feeding?

DR. RITCHIE: It is interesting to see how well some of these babies do on tube feedings. One child has been tubed now for about six months. I feel that these palates should not be operated upon (and then only in selected cases) earlier than six months. This cleft palate work is really a big procedure and there is a reaction to it that we cannot afford to risk if we can develop a way of feeding and this gavage is proving most successful.

I never want to make an alibi on this work and am perfectly willing to report every case. Less than 50 per cent of the primary operations on the hard palate are successful entirely and the other 50 per cent have come back for a secondary operation. These twins were tubed for ten days after the palate operation, and on the fourteenth day a hole appeared in the hard palate. I think the tubing or gavage are life savers on a lot of these cases, but they are

only used as preparatory before operation to get the child built up, and as soon as we get the palate closed I think that spoon feeding is the proper procedure.

DR. BENJAMIN: This is the most disappointing of all surgical work. I had the pleasure of seeing five cases in my office—every one of them failures. Some woman had brought them in in order to show me what success she had had in teaching them to talk. I think Dr. Ritchie's classification is perhaps as logical as any I know of and is the one we should adopt.

I have used adhesive plaster in cases of cleft palate with a large protruding pre-maxilla and it is surprising how much easier the work of repairing these cases was afterwards and how it brought the tissues together. The plan of operating on the cleft palate first in some cases I think is wrong because in a number of cases, as Dr. Ritchie has demonstrated, the cleft in the palate nearly closes of its own accord if the lip is operated first.

DR. FARR: I do not believe that tubing is responsible for the failure of union in these cases. I recall a case which broke through three weeks after operation, after the patient had returned home. The union in this case was evidently not as good as it appeared.

With regard to the re-position of the bones, Dr. Brophy's contention is that no re-position is complete unless we have a bony union of the alveolar processes, which union he claims is very helpful in the future development of the upper jaw. When the lip closure is depended upon to bring the processes together, bony union cannot take place.

I have shown a picture of four patients whose lips were closed in infancy in which each patient could place the middle finger between the anterior margins of the alveolar process.

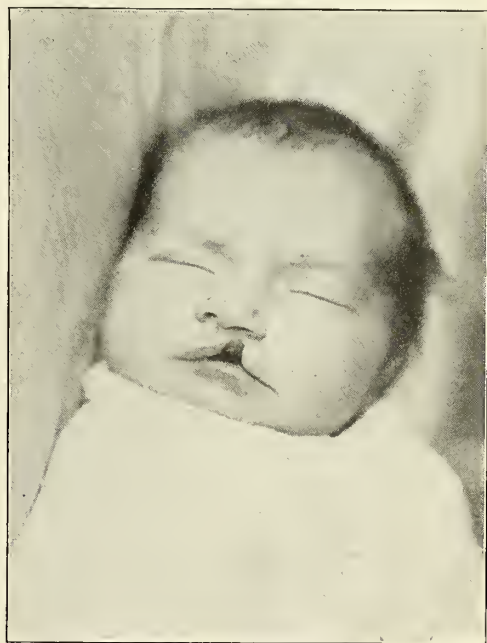


Figure 3. Louise. Group III Alveolar cleft left complete. Lip incomplete before operation.

Dr. H. B. SWEETSER reported a case of carcinoma of the hepatic flexure of the colon.

Mrs. W. S., married, 43 years, 8 children, stout, had never had any previous illness and no attacks at all similar to those now complained of. Is extremely nervous.

Family history negative. Father lived to age of 85, and mother died at 65 from gangrene of the leg. Four brothers and three sisters are living and well. There is no case of cancer in either branch of the family.

Present History: Patient was first seen by me on August 9, 1922. About a month before, she began to have attacks of sudden pain across the lower abdomen which came from one to four or five hours after eating and lasting a short time; these pains were not very severe and she had not consulted a doctor. Her bowels before that time had moved daily but since then she has had to take a cathartic. She has had no diarrhea nor vomiting. Her appetite is good but she says she is afraid to eat. She thinks she has lost some weight. I saw her again on September 14th and she stated that she was much better as regards her bowel symp-



Figure 4. Louise. After lip and process closure.

toms but was very nervous. On September 16th she telephoned that she had a severe attack of pain in the abdomen with a desire to move her bowels but with little result. In a few hours this had passed away; this was repeated on September 20th and she was then sent to the hospital for observation.

Examination at the hospital on September 21st: She was given a barium meal which proceeded easily to the hepatic flexure of the colon and there stopped. Although she was given castor oil first and atropin later, on the fifth and sixth days the bismuth still showed a shadow stopping



Figure 5. Group III Alveolar cleft median. Lip median incomplete before operation.

at the hepatic flexure. An enema of barium was given on September 24th and then on September 30th; in both of these the barium stopped at the hepatic flexure and did not intermingle with the barium meal. No tumor was palpable at all. From these findings the diagnosis of obstruction was made due probably to an annular carcinoma.

Operation was done on the fourth of October under gas anesthesia and an annular tumor was found causing almost complete obstruction about an inch in diameter and projecting into the lumen of the bowel, entirely encircling it. A resection was done including about six inches of the ileum, the cecum, ascending colon and the transverse colon to the left of the middle line. An end-to-end anastomosis was made following the technic of Horsley in the endeavor to make an artificial valve. Following the operation there was no vomiting and no distention; and she passed gas freely on the second day. At the present time, eight days after operation, the patient is in very good condition, having had an uneventful convalescence so far. Microscopically this was adeno-carcinoma.

DR. HEAD: Then the prognosis is fairly good?

DR. SWEETZER: I think so.

DR. ULRICH: How long do you think it had been there?



Figure 6. After lip and process closure.

DR. SWEETSER: Her first symptoms were in June. I could not find anything wrong with her and put her down as a neurasthenic case. She did not make much of the attacks of pain. Her bowels had moved every day up to that time and there was no vomiting at all.

DR. ULRICH: One of the striking things is the fact that there was no dilatation with this obstruction. Was there any hypertrophy?

DR. SWEETSER: Not a thing. I was rather surprised to find this condition at operation. To have the bismuth stay there for seven days and still have no more clinical symptoms than she had was the surprising thing to me.

DR. WALLACE COLE read his Thesis entitled, "Primary Tumors of the Patella." No discussion.

MEETING OF NOVEMBER 8, 1922

DR. E. M. HAMMES reported a case of cerebrospinal syphilis.

This young woman, 26 years old, was first seen by Dr. Carroll, February 26, 1922, complaining of a sore throat. A blood Wassermann at this time was positive. Because of the danger of publicity, she decided to go to Minneapolis to take treatments for this condition. She was given intravenous treatments of neo-salvarsan for seven doses at five day intervals. On March 20, 1922, she was operated on by Dr. Carroll for pyosalpingitis and after she had recovered from this her intravenous treatments were again resumed. She was given six more treatments. Her treatments were discontinued July 13th. July 20th she developed a severe, constant headache—more marked over the frontal region, which continued for about three weeks. On August 11th she became nauseated and on the next morning she became aphasic and a few hours afterwards semiconscious. Dr. Carroll asked me to see her at this time. Her neurological examination was negative throughout; her blood Wassermann was positive; her spinal fluid was under pressure, had a positive globulin, 65 lymphocytes per cu. mm., a four plus Wassermann in 1 c.c., and a positive colloidal gold curve 0123443210. She was placed on .6 gram neosalvarsan intravenously with spinal drainage once a week, combined with mercury intramuscularly and increased doses of the iodides. This was continued until October 1st. Her aphasia gradually cleared up; her headaches disappeared after the first week. An examination of the spinal fluid on October 3rd showed the following: normal pressure, a trace of globulin, 21 lymphocytes per cu. mm., a negative Wassermann in 1 c.c., but a positive colloidal gold curve 0123343210. Because of the presence of the lymphocytosis in the spinal fluid and the positive colloidal gold curve, we have advised further treatment in this case.

Stokes has called attention to the great danger of relapse in those cases where treatment has been discontinued before the lymphocyte count in the spinal fluid has returned to normal. I am reporting this case to again call attention to the great importance of an examination of the spinal fluid in every case of syphilis. Furthermore, I want to emphasize that in cases with definite spinal fluid findings, the intravenous treatment of salvarsan with spinal drainage or the

combined intravenous and intraspinal medication gives better clinical and serobiological results than the intravenous treatment alone.

DR. R. E. FARR reported a case of fracture of right tibia and fibula.

Master A. W., age 14.

Operation—open reduction. Screw fixation.

Local anesthesia.

History: Patient entered St. Mary's Hospital September 26, 1922. September 15, 1922, the patient was kicked in the right leg by a playmate. X-ray showed fracture of both bones. Patient entered another hospital and reduction was attempted. The reduction was incomplete. Open operation was advised and the patient then came under our care.

Anesthesia: Local infiltration block at the junction of the upper and middle thirds of the leg. Approximately ten cm. above point of fracture of tibia, 120 c.c. of 1 per cent procain solution was used.

Operation: After unsuccessful attempts to reduce the fracture under the fluoroscope, open operation was carried out. A curved incision 15 cm. long was made on the outer aspect of the leg. The tibia was forced into alignment and held by bone forceps while a drill was introduced through puncture wounds made in the skin of the flap. Through these incisions long screws were inserted firmly approximating the fragments. The incision was then closed and a plaster paris cast applied over copious dressings, a window being left for the projection of the screw heads. Primary healing resulted. All dressings and the stitches were removed on the eighth day. A close-fitting plaster cast was then applied to the limb and after its application the screws were removed through a window which had been allowed to remain in the cast. The patient was then allowed to return home and now—one month after the operation—union seems to be complete. We have employed this method in a number of cases with most excellent results. Eight days is the earliest time at which we have removed any of the screws, but it would seem that the earlier they are removed the better.

DR. HERBERT JONES reported two cases.

I have two cases that have bothered me a good deal. One of them was a woman about 30 years old (this was seven or eight years ago). I was called to see her in consultation and the prominent symptom was a respiration of four to the minute with absolute cyanosis. That condition had kept up for an hour then and gradually lessened for two to three hours afterward. There was a very marked interference with the centers of respiration. She had had two or three previous attacks milder in character and less in duration. We waited until she recovered from that and endeavored to get a history. She fooled us right along on the history and we couldn't get much from her. She was married at this time but no children by this marriage. She was very deceptive and did not give us much information. Nystagmus was present and the Wassermann negative.

I did a sub-temporal decompression and two weeks later did a cerebral decompression. She showed a great deal of

pressure, and her condition was so precarious that we simply did a decompression. There was a clearing up of her symptoms and she passed out of my observation. She did her housework and got along fairly well until this spring, when she had a milder form of these attacks. One was in a shop and friends took her to a local doctor and he sent her down to me.

At this time the decompression had worked well enough so that there was little pressure. The symptoms now were abdominal. She had a tumor with large inflammatory deposits. I did a hysterectomy and she got along very nicely for some three weeks and then developed a phlebitis of the left leg. Then she developed a pain in the chest and had asthma and bronchitis with a good deal of coughing. The train of symptoms seemed to involve her whole system, but still we could get no history. I was just about to give her mercury when her step-mother came down and she gave us a history. It seems that her father and mother had separated when this girl was 14 years old (which is a very bad thing for the children) and both had married again. They had taken this girl to a small town in the northern part of the state. There her new step-father had a place and his brother had another near it and his wife was the school teacher and they got this girl to do the janitor work. The first thing they knew she was pregnant and the step-father's brother was the father of the child. They brought her down here and put her in Bethany Home immediately, where a diagnosis of syphilis was made. Afterward they sent for her step-mother, who lived in Dakota and who took the girl home with her. She was put under the care of a physician out there, with no evidence of lues whatever. She went up north again and became pregnant again, but miscarried at five months. It was not very long before she was pregnant again and that child lived several months and died. Evidently the long time existing between the infection at fourteen and the test is the reason we never have gotten a positive Wassermann on her.

Case 2. The other case came to me last summer with a large fibroid tumor. She was a small woman, thin, and a nice case to operate on. The tumor had been allowed to go just as long as she could stand it. It had pressed against everything in the pelvis and there was very little room for anything else there. I opened the abdomen and tried to pull the tumor up and it was absolutely the hardest thing I ever tackled. The uterus was not visible except a little part of it up near the promontory, where we could find one tube. The rest was lying back of the fibroid and was elongated to about eleven inches in length. I went down as far as I could on one side and pulled the thing up and then went down on the other. She then got to bleeding so much that I had to hurry a little and, when I finally got the tumor out and found what I had, I discovered I had completely ligated both ureters and torn the bladder. The pointed end of the tumor had stuck right into the bladder drawing the ureters right in between this and the cervix so that the ureters were right against the tumor and the uterus. Fortunately we discovered all the trouble in time so I took the ligatures off of the ureters and sewed up the bladder and the woman made an uninterrupted recovery as good as any hysterectomy you would want to see.

DR. GUSTAV SCHWYZER reported the following case:

The patient whose pictures I am showing you today is a 33 year old woman who had a confinement November 2, 1922. The child is a healthy boy. She has had all in all nine confinements. The second last confinement took place August 19, 1921. Very soon after that she noticed a swelling in each groin below Poupart's ligament. The swelling in the right groin disappeared within a few days, while the other swelling on the left side remained and later on increased in size, though very gradually. The consulting physician made a diagnosis of an inflamed vein and encouraged the patient to leave it alone.

This swelling on the left side is today representing the tumor that I wish to speak about. As you see on the picture, it consists of a slightly irregular growth of hard consistency and about the size of a child's head. The skin is broken open at its top and a necrotic area is visible within this broken skin. It lies directly over the fascia lata. By palpation we find that it does not reach the Poupart's ligament and is movable in toto slightly in the vertical sense, but more so in the horizontal direction. We took a section out of this growth for the pathologist, who gives us the surprising news that we have before us hypernephromatous tissue. The large epithelial cells are well demarcated and the nuclei contain numerous mitotic figures. Clinically we are unable to find by palpation any enlarged kidney nor do we find in the history any bloody urine. The uterus is small, cervix still open and still discharging, no perimetritis, no parametritis, no infiltration on the side where we find the tumor. The thyroid gland is absolutely normal.

Yesterday, November 8, 1922, we inserted 125 milligrams of radium in all directions of the tumor through the little opening we created in the anterior portion of the tumor, being aware of the danger of making multiple skin lesions.

Furthermore we will mention that three days before the patient came to us the tumor was incised but only blood discharged. An erysipelatous infection set in, spreading all over the thigh clear down to the knee and sideways toward the ischium pubis.

Moreover we will add tonight that after inserting the radium the temperature did not go up as high as before. The tumor looked more quiet this morning. Should we become convinced that the reaction of the radium is favorable and that the diagnosis of sarcoma of the fascia lata becomes more than probable, we shall make an attempt to excise the growth.

DISCUSSION

DR. MANN: That reminds me of two cases which I had a few years ago, several years apart. One of them, an unmarried woman of 43 or 44 years of age, had a tumor about the size of a hen's egg in the left groin. It was rounded, smooth, and the skin slid over it. It was fastened, however, to the fascia. I removed that and had to take some of Poupart's ligament. The pathologist's report was round celled sarcoma. Dr. Bell examined the specimen. That woman is still well and that must have been about seven years ago.

The other one was a woman in her thirties who had a tumor in the same place and about the same size—perhaps a little smaller. This one was fastened to the round ligament. That was a benign adenoma with tissue in it suggesting the tissue of the uterus. My explanation of that was that a piece of that ligament had drawn down some of the uterine tissue in the embryo.

DR. A. T. MANN reported three cases with a history suggesting ulcer of the duodenum.

I am very much interested in these cases and we have had a good number of them.

In one of the cases, after careful study, the history was quite characteristic with the seasonal incidence of spring and fall; the pain coming on about two hours after meals and the pain made worse by the fatty foods and things of that sort. The x-ray findings showed at first an indefinite outline for the duodenal cap, but was not conclusive. A re-ray, with belladonna to get rid of the muscle tonus, still showed that same condition and a diagnosis was made of ulcer of the duodenum.

In the second case the history was not at all conclusive. The incidence of his trouble was not the seasonal one—at least it did not follow that closely—and while he had trouble with his food he did not have trouble with all the foods that cause trouble in cases of ulcer of the duodenum. There was a little tenderness to the right of the median line. The history suggested a possible gallbladder disease without the characteristic pains. The x-ray findings showed a little obscurity on the upper anterior margin of the duodenal cap. A re-ray under belladonna showed that still present, so a diagnosis something like 60 per cent for ulcer and 30 per cent for gallbladder with possible adhesions, and the rest of it for a chronic appendicitis, was made.

The third case seemed in its history to be more like a gallbladder, but there was a persistent defect in the duodenal cap and it persisted after a second x-ray under the administration of belladonna.

The first case at operation showed a small area which was a little whiter than the normal color of the duodenum. Under the finger there was just a little more thickness than normal. I felt that the diagnosis was correct and excised a portion of the duodenum which included this scar and sutured it with a double row of chromic gut so that the suture line was about one inch long when done. There was a small ulcer less than one-eighth of an inch in diameter on the inside of the area of the scar.

The second case proved to be a chronic cholecystitis. In this case the gallbladder was removed.

It is very difficult before operation to make a really accurate diagnosis between a gallbladder with adhesions and an ulcer of the duodenum unless the history is perfectly clear. In the first case the HCl content was quite characteristic of ulcer. With the gallbladder case the hydrochloric acid content ran up and then went down before the next meal, and that we have picked out as one of the fairly characteristic curves of a stomach with reflex stomach symptoms in which there is a gallbladder or an appendix

or other cause outside of the stomach itself. When the cause is a true ulcer of the stomach or of the duodenum, the fractional test-meal taken at fifteen-minute intervals shows that the hydrochloric acid curve is apt to continue high up to the next meal and then to drop.

The third case was operated on and we found a definite ulcer scar, which I excised. The excision of the ulcer we have done by preference for the past year. That gives a smoother and quicker convalescence and the convalescence is better than our old cases used to be. We have swung quite decidedly to an excision of the ulcer if that can be done.

DISCUSSION

DR. ABBOTT: Did you make a gastroenterostomy in these cases?

DR. MANN: No, we just make a simple excision of the ulcer.

DR. CORBETT: I should like to ask about these adhesions between the gallbladder and the duodenum.

In some such cases where such adhesions existed, the gallbladder has been removed and on examination proved to be normal. In addition, pathology in the duodenum can sometimes only be demonstrated by opening the duodenum. So I believe such adhesions indicate pathology in the duodenum as well as in the gallbladder.

DR. MANN: That is all perfectly true. However, when there are adhesions often the ulcer is quiescent and healed and the symptoms may continue. There is one last case which I had but have not mentioned which was definitely a gallstone case. I operated for gallstones and the gallbladder looked perfectly normal and blue in color, but I finally removed 60 stones. So to the naked eye a diseased gallbladder sometimes looks quite normal. It requires a microscopic examination of sections of the walls of such a gallbladder to disclose the pathological changes which are present.

DR. A. E. BENJAMIN reported a case of infected knee joint and staphylococcus aureus infection of the blood.

Mr. R. N., age 13, student.

Family history negative.

Personal History: "Flu" in 1918, light attack, otherwise quite well.

Present Illness: October 1st fell while running and bruised both knees. Two weeks later left knee began to show signs of superficial infection in small area. October 15th fell again, striking left knee. Saturday, October 21st, joint began to pain severely and swell. Hot applications and ice bags applied alternately. Superficial infected area opened on October 24th by attending physician. Hot applications applied. No relief. Nausea, vomiting, anorexia. Brought to hospital Wednesday night, October 25th. Temperature 101-103; pulse 110-125; leucocyte count 24,000.

Physical Examination: October 26th. Head: some stiffness of neck and back muscles. Chest negative. Abdomen distended; some pain on deep pressure over gallbladder area. Spleen enlarged about one-half times the normal. Extremities: left thigh somewhat enlarged, knee considerably swollen and tender over joint with some fluctuation, more pronounced to outer side. Floating patella. Super-

ficial area of infection from injury one-quarter of an inch in diameter. Aching of back and muscles.

Treatment: Serum (anti-tetanic) given, 1,500 units two days in succession on account of possible tetanus infection.

Operation October 26th, 1:00 a. m. Gas anesthesia. Knee joint aspirated. Joint fluid found to be infected. Joint incised at inner side of patella. Phlange drainage tube one-fourth inch in diameter inserted. Joint washed out. On account of leucocyte count increase and patient showing further signs of infection the joint was drained more thoroughly on November 1st at 10 a. m. Gas anesthesia. Inside of knee joint opened beneath patella. Rubber strip passed through to opposite side. Joint irrigated daily thereafter. Posterior part of joint not involved. Joint moved occasionally.

Laboratory Findings: Leucocyte count: October 29, 27,500; October 30, 48,500; October 31, 72,750; November 1, 95,375; November 4, 78,000; November 6, 63,000; November 8, 50,800.

Urinalysis: November 3, pus cells + + +; November 5, cloudy, acid, 1,025, albumin very faint trace, few pus cells; November 6, albumin very faint trace, few pus cells.

Differential Count: October 29th, small lymphocytes 8, large mononuclears 1, transitionals 8, P. N. 89. October 31st, small lymphocytes 14, P. N. 86.

Blood Culture: November 3, staph. aureus. November 5, positive staph. aureus.

X-ray of knee October 31st showed no destruction of articular cartilage. X-ray of chest, liver and kidney on November 6th, liver enlarged, possibly right kidney and possibly some diaphragmatic pleuritic thickening.

Comments: Patient's back and neck symptoms gradually disappeared. Abdomen more flat, bowels more regular. Appetite somewhat improved. Pain in region of liver and right kidney, and two superficial sore and red areas appeared. Some enlargement of liver and right kidney. Breathing rapid during whole course, being about 30 per minute. Temperature ranging between 101-102, pulse 110-130. Kidney function much lessened for a time, so fluids were decreased and output became increased proportionately until present time, being 800-1,200 c.c. daily. Patient has had no chills, very little delirium, sleep irregular, somewhat disturbed, no headache, no nausea or vomiting since October 24th. Left parotid gland began to swell on November 6th. Today three times normal size and painful. November 3rd some pleuritic friction rub on right side, less on left, anterior, and central. Heart apparently normal.

Results: Patient's temperature running between 101-102. Pulse 120-130, fairly strong and regular. Respiration, 30-35. Patient somewhat emaciated, appetite poor, tongue clear, all faculties normal, but has disturbed sleep. No headache or pain excepting on pressure over sore areas, namely, enlarged parotid gland, area over liver, and one area above inner side of left knee. Left joint freely movable and swelling in thigh much reduced. X-ray shows liver and kidney enlarged and prolapsed or pushed down some. Dr. Corbett saw the case in consultation.

Leucocyte count November 8th, 50,800.

DISCUSSION

DR. CORBETT: I would like to say just a few words in regard to this case. It is a very puzzling one inasmuch

as the staphylococci were so easily found in the blood cultures. Clinically it looked like a multiple pyemia. However, the child had no chills. The kidneys felt distinctly tender, there was some involvement of the parotid, and in spite of the improvement of the knee the patient's general condition became worse instead of better. The surprising thing is the high leucocyte count. There seems to be very high resistance on the part of the leucocytes.

It brings up in general the treatment of infections of the knee. I remember of listening to a paper by Dr. Maxeiner telling of wide incision of the knee joint and allowing the patient to use the knee joint. I have tried this method with very considerable success. In one case I found increase of symptoms, so I immobilized the knee and almost at once the joint improved.

Now the initial injury in this case is a peculiar one and it is remotely possible that the knee was only a part of a general infection at the time of the injury. I don't think we are justified in saying that this appearance of the staphylococcus was the moving of the knee. I think we are yet in the infancy of treatment of infections of the knee joint.

DR. DUNSMOOR: Speaking about immobilizing that knee and putting in a drain, Dr. Murphy said, "Those joints which are fixed and continuously drained become stiff."

DR. COLE: I think this subject of drainage of the knee is very important because we do see stiff knees. There are three general courses to follow as a rule. The first type— infection of the knee where you aspirate and find pus—if you open it up wide and sew it up tightly, in a big percentage of them you will get a movable knee. You may have to aspirate a few times. There is another type, where all you have to do is to open up the infection and start the Willms treatment, which is the active movement of the knee. It stimulates the knee joint so that you don't get the atrophy. Then if you see the knee going on to destruction, open it wide, put in Dakin, and get a stiff knee.

DR. FARR: I rise to add my approval of the use of the Willms method. We have had only a few cases, but where the patient co-operated the success has been uniformly good. In addition to the knee case mentioned by Dr. Corbett, which occurred in my practice and in which Dr. Maxeiner took care of a streptococcal infection, we have had a woman nearly fifty years of age with a septic arthritis of the hip that had been neglected for several weeks, when a quart of pus was evacuated from the joint and a finger exploration showed a denuded bone. In this case we established through-and-through drainage, placed a heavy bandage beneath the patient's foot so that she could aid herself in drawing the limb upwards and she came through with a perfectly movable joint.

DR. EMMET RIXFORD (of San Francisco): I am very pleased to meet the members of this Society. In regard to this kind of a case, Dr. Cole sized it up very well. The only thing I could add, and it is of considerable importance, is to get rid of any blood clots and any coagula that may be in the joint in applying the Willms treatment. It is a very striking thing to see the joints become movable.

DR. BENJAMIN: We are not concerned about that knee so much, but we want to save his life. I would like suggestions so far as treatment is concerned. Is there anything more that can or should be done in the way of general treat-

ment? He is a very sick boy and it doesn't look as though he would pull through unless the leucocyte count is a true index of his condition.

DR. ZIMMERNAN: In the x-ray there, is there any indication of a sub-diaphragmatic abscess on the right side?

DR. BENJAMIN: We had thought of that though there are not other indications enough yet.

DR. W. A. DENNIS read a paper on "The Use of Radium in the Treatment of Benign Prostatic Enlargement."*

Discussion by Drs. Mann, Rixford, Farr, Earl, G. Schwyzer, and Dennis.

DR. MANN: I think this paper should not go without discussion. In the first place the effect of radium varies with the distance. It also carries with it, to my mind, the advisability of using more than one needle. I have had only one case in which I have used it and my aim there was to put in needles that filled the lobe at a distance of 1 cm. apart so that no two needles would be bunched in the same tissue and that the whole gland would be more or less uniformly influenced by the radium. I introduced four 10 mg. needles into the gland and kept them there between 11 and 12 hours. The mode of introduction there was to have a trocar which would just carry the needle and, with the finger in the rectum, the trocar is inserted and its position pretty definitely known. Then the needle was pushed through the trocar and pushed down into the tissue just where we wanted it and the trocar left in place. Then the next trocar was placed in a similar manner and the needle introduced. The withdrawal of the needle then can be accomplished easily. The needles are very blunt tubes with an eye at the back end in which wires can be inserted and the needles pulled back through the trocars, which are left in place while the needle is in. The patient's temperature was less than 102. He had no special reaction except the slight rise in temperature. The withdrawal of the needles and trocars is easy, as they can be pulled out together.

One other point: the mucous membranes are very sensitive to radium and the needles should not be inserted next to the rectal mucous membrane.

DR. RIXFORD: I am afraid I can't add anything to this discussion. This work with us is done entirely by the genito-urinary specialist and I am just a plain surgeon. The point about the radium damaging the mucous membrane, however, is very well taken for the general surgeon is often called upon to repair the damage. I remember one case of a dentist who had cancer of the rectum treated by radium in Los Angeles. It had played havoc with everything in the neighborhood and his comments were, "I have suffered the tortures of the damned." One case of carcinoma of the prostate which I saw in consultation, radium had not been used as judiciously as it might have been, and there was a sloughing into the rectum. Operation has given him a fair degree of comfort. The use of radium in hypertrophy of the prostate, I know nothing about, but am very much interested in the matter. Of course, one would hardly feel justified in thinking that we have gotten to a point where

we can use radium as against suprapubic prostatectomy. That is a pretty good operation if the patient is able to stand it. It can be done under suprapubic or spinal anesthesia in those old cases in which we would not care to give a general anesthetic.

DR. FARR: I think we should feel indebted to Dr. Dennis for bringing this matter before us. I recently visited the clinics of a number of men and I have seen them use this method, although I don't remember any of them reporting such excellent results or relief. In the cause of cancer of the prostate this condition offers surgery no chance. I have not seen it used in benign diseases. It seems to me that he is to be congratulated for bringing the thing home to us at this time, for perhaps we have not been stirred up to the possibilities of the use of radium.

DR. EARL: I have used radium in several cases but have limited its use to the cases of undoubted malignancy and our results have not been at all as satisfactory as Dr. Dennis's. I have wondered if I should not have used it in some cases where I thought there was simple hypertrophy of the prostate. Possibly the explanation of Dr. Dennis's good results is that he has been treating principally non-malignant cases, and mine have been malignant.

DR. G. SCHWYZER: I feel indebted to Dr. Dennis for his paper. It has been my practice in the last two years to make the two-step operation for hypertrophy of the prostate gland. The cystostomy is made first. Usually the function of the kidneys is below the normal mark previous to the cystostomy. In one to two months the kidneys generally improve and then the second step, removal of the prostate gland, is done. Now should the kidneys not come up to the norm, a prostatectomy is very risky, but if the hypertrophy of the prostate gland can safely be treated with radium, as Dr. Dennis has outlined tonight, I feel that his thought is a worthy addition in the treatment of non-malignant type of hypertrophy. I shall be glad to take the opportunity to try the treatment outlined in such cases where the kidney tests remain too low for my second step operation.

DR. DENNIS, in closing: I was interested in what Dr. Farr said. As far as I could find in the literature, there was nothing in regard to the benign conditions. In regard to what Dr. Mann said about the needles, I will say that our needles are sharp and screw on to a shaft the same size as the needle so we don't have to use any trocar at all. In regard to the seriousness of it, the point is that there are a lot of men who would consent to have this thing done—it only requires 24 hours in the hospital, there is no pain or discomfort, and so far as I can tell there is no danger. It can be repeated as often and as long as necessary. It seems to me that so far as the lateral lobes are concerned they can be reduced as much as necessary. I think the real difficulty will come in the treatment of the large lobe. It seems to me that either by the introduction of the needle or by introducing them through the cystoscope, the middle lobe can be reduced to such a point that the small part that is left may be removed by the use of Young's puncture.

There isn't one of these cases that I reported that has had a complete result. They are much better, but two of them at least have some residual urine. I wished particularly to emphasize the consideration of safety in this method.

*See page 9 this issue.

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

STATED MEETING HELD APRIL 17, 1922.

THE PRESIDENT, DR. R. C. WEBB, IN THE CHAIR.

SARCOMA OF THE FEMUR

Dr. A. T. Mann presented a male patient, 28 years old.

The first thing of importance attached to the history is that a little over three years ago, while going through some severe exercise, felt pain and evidently had a rupture of a few fibers of his rectus femoris muscle. Afterwards a bunch the size of a lemon developed. This gradually went away in about three weeks. Nothing then until last August. That makes two and one-half years. Whether this history has any relation or not it would be difficult to say. That is the only question of trauma.

Last August he began to have pain in the same place and noticed a little bit of swelling there. A diagnosis was made at that time of tumor in the femur. He has been waiting all this time and now comes in with the tumor which you will see and which is here shown in the x-ray box. This is definitely a picture of a sarcoma of the femur, a periosteal sarcoma and not a central one. In the central ones the shaft of the bone is quite apt to be enlarged and spindle-shaped, not because it is pushed out but because the inside is gradually absorbed and the periosteum develops new bone so that it becomes spindle-shaped. In this case it does not; the shaft runs through it. The central sarcoma again tends to break through, one point first, and irregular bunches can be felt or enlargement of bone in other places. The periosteal sarcoma tends to run around the bone and is more or less spindle-shaped with a somewhat lobulated form, some parts of which produce bone and some parts not. I think it is more apt to be near the joint than near the center of the shaft of the long bones, as it is in this case, although any bones in the body may be affected. In the long bones the tibia and the femur and then the humerus, in the order stated, show the greatest number, and usually near the joint. The lower bone (the tibia) has it nearest the top of the bone, and the humerus, the opposite way, that is, they are in the direction opposite that of the blood supply. For some reason I do not know, the nutrient artery runs away from the knee joint down the tibia; in the humerus it runs downwards.

In making an early diagnosis, it is sometimes very difficult. The diagnosis between a sarcoma and non-sarcoma is confused sometimes with periostitis and with osteitis and with non-suppurative osteo-periostitis. Between the central and periosteal sarcoma, however, there is not much difficulty in making a clinical diagnosis. In the first place, with the central sarcoma when it breaks through, there is almost always pulsation of the sarcoma, which when it is near the joint very often suggests aneurysm of the large vessels near that joint. Then, this is more or less lobular in its form. The central sarcoma is more apt to be fusiform. Its margin finally runs down and comes more abruptly to the line of the shaft of the bone. The central sarcoma is more or less evenly spread over the bone, giving a more gentle incline at the margin.

In regard to the prognosis: The central sarcoma in the

first is much rarer than the periosteal. The periosteal is very much more common and probably more common than statistics show and is spindle-celled as a rule and therefore should not be as malignant as the round-celled sarcoma. The central sarcoma is considerably more rare and is usually a round-celled sarcoma, which is very malignant. But these periosteal sarcomata of the long bones upset all of those relations and there seems to be just as fatal a prognosis with them as though they were round-celled sarcomata. The fact that they produce bone should make them less malignant, but it does not.

Here is the young man, 28 years old, and he has lost 14 to 18 pounds. Now that is the first thing. Sarcoma, as a rule, does not give loss of weight except in the late stages.

I put this boy to sleep last Monday, intending to disarticulate at the hip. Gave him ether and after the first few breaths and in the first primary the mucus was blood-streaked. I watched that for a few minutes and it continued blood-streaked. We have had careful studies of the lungs to find secondaries before I attempted operation and it was reported that none could be found and were probably not present, so we went in with a feeling pretty safe about the lungs as far as any reports we could get about the lungs. Sputum from the lungs was thoroughly examined and no tuberculosis found, nor were other untoward processes found clinically in his lungs. Although the man seemed to show by Roentgen and clinical examinations that he did not have a metastasis in the lungs, I stopped the operation and left the man with two legs instead of one, as I thought it would be useless to remove the leg with a lung complication and that he would have a better life with his two legs.

The early symptoms of sarcoma are rather obscure and usually begin with pain and then with swelling and the pain and swelling increase slowly and continuously. They are often very like rheumatic pains at first. The pain is often referred to the joint. But in inflammatory conditions we generally have remissions of pain. In sarcoma the pain and the swelling usually are constant and continue to increase.

TUBERCULOSIS OF THE CERVICAL SPINE WITH PERFORATION OF THE ESOPHAGUS.

Dr. James Johnson presented a man 30 years of age, single, salesman by occupation.

Past Diseases: Negative except for typhoid fever at nine years of age and occasional attacks of malaria while living in the South.

Present trouble dates back to the spring of 1919 when he began to complain of pain over his sternum, between his shoulders and radiating down his arms. On March 5, 1920, he first consulted Dr. J. P. Schneider, complaining of the above condition. At this time he also had occasional slight fever with pain between his shoulder blades and down his arms and over the upper part of his sternum. Had gradually become worse. At this time a complete physical examination was done, including x-ray of the chest and gastro-intestinal tract and tuberculin tests, all of which were negative. He was kept under observation for several weeks and improved so that he was able

to return to his work. Although he had intermittent attacks of pain between his shoulders, radiating down both arms, he continued his work and felt fairly well until May 17, 1921, when he again returned, complaining of pain over his sternum, in the epigastric region, and severe pain between his shoulders radiating into both arms. He had a temperature of 102 degrees and was quite ill. He was sent to the hospital under observation and soon developed an abscess on the left side of his neck which was opened and drained.

In October, 1921, he first came under my observation. Several x-rays at different angles were taken of the cervical spine. All proved negative. Drainage had continued for several months, and in order to get a more definite explanation of this, a thin bismuth paste was injected into the sinus on the left side of the neck. This at once came through his esophagus and he spat it out on his tongue. A stereoscopic x-ray was taken immediately which demonstrated a pocket in the left posterior chest, one end of which extended upward and inward, perforating the esophagus at about the level of the seventh cervical. It was thought, therefore, that the original condition might be a diverticulum of the esophagus which had become infected and ruptured on the left side of the neck. It was not typical for this condition, but the sinus entered the esophagus at a point where these occur, and since no other reason could be found for the discharge and no bismuth could be traced to any of the vertebra, this served to explain his condition.

On February 13, 1922, I operated, making a longitudinal incision on the left side of his neck, dissecting down to the esophagus, and found a perforation at the left side at the inner border of the carotid sheath through the anterior vertebral fascia into the esophagus. The sinus extended both up and down posterior to the anterior vertebral fascia. A probe was passed and seemed to lead to the seventh cervical, where the bone felt a bit eroded. The fistula into the esophagus was closed and packing was left in to wall off and prevent infection of the mediastinum. His convalescence was rapid and uncomplicated. He left the hospital in about a week. His vertebrae were again x-rayed at various angles and a small focus could be made out on the right side of the seventh cervical and possibly a little in the first dorsal.

From the operative and x-ray findings, the case was now clearly a tuberculosis of the cervical spine. He was put to bed with extension. He soon developed an abscess on the right side of his neck, which was opened and drained for a short time. Since then all symptoms have subsided. The sinuses have closed. He has had no temperature for three months and he has gained twenty-five pounds in weight.

Comments: My reason for reporting this case is:

- (1) The lesion apparently was present several years before any definite local findings could be made out.
- (2) Its close resemblance to an esophageal diverticulum.
- (3) Perforation of the esophagus through which the drainage must have taken place until an abscess developed in his neck.

INTESTINAL OBSTRUCTION WITH ENTEROSTOMY.

Dr. H. B. Sweetser presented a patient 17 years, single, well-developed.

January 29, 1922: Appendectomy. Appendix three inches long, three-eighths of an inch in diameter, close to the anterior abdominal wall, coiled like a corkscrew, covered with fibrin, surrounded by coils of bowel with exudate. Free yellow serum, about half an ounce, in the pelvis. Omentum adherent. Cigaret drain carried to the pelvis, which was removed gradually and was all out in a few days. Patient went home healed in two weeks.

February 17, 1922: Sudden pain and vomiting. Given milk of magnesium and also an injection. Passed gas. On the 18th passed some gas. On the 19th at 7 a. m., vomited ten ounces with a slight fecal odor.

February 19, 1922: At 8 P. M. opened and excised former scar. Entered peritoneum. Omentum and many coils of bowel matted together and to the anterior abdominal wall. In two places dense adhesions covered and constricted coils of bowel. (Tympanites.) These were separated and the abdomen closed. Following this passed gas, but had severe colicky pain. Nauseated, but did not vomit. Abdomen somewhat distended, but not rigid and not tender. Pulse and temperature normal.

February 21, 1922: 10:30 A. M. Enterostomy. Pulse 120. Temperature 100. Opened incision partially. Some exudate (sterile). Peristalsis present. Coils somewhat distended, but not extreme. Fastened coil of small bowel to anterior abdominal wall. Forced No. 20 catheter through small opened and attached. Two purse-string sutures of linen inverted bowel wall, tightly around tube. About 12 hours afterwards passed flatus freely through rectum and large watery stool. No further obstruction.

February 23, 1922: Fecal matter along the tube. In the afternoon the tube came out. The skin became very much inflamed, showing bowel opening must be fairly high. Rectal movements large.

March 14, 1922: The opening now had stretched to about one inch in diameter. After undermining the edges and cauterizing the mucous membrane, sutured the edges of the enterostomy. This held for only about seventy-two hours. Several later attempts were made to close the opening, unsuccessfully. This, I think, was due to the short coils partially obstructed.

March 29, 1922: A very serious attempt made before opening into general cavity. The mucous membrane edges were *not* sutured. A Lambert suture turned in the mucous membrane edges. Both anterior and posterior layers of rectal sheath were freely mobilized. No. 00 chromic gut used. Flooded with ether several times during operation. Skin closed. Very little nourishment given for some days. Six days after, a very small opening occurred, but closed in two or three days. Since, it has remained closed.

POINTS OF INTEREST

1. Obstruction *not* relieved by loosening coils and adhesions, but
2. Was relieved as soon as the distention was relieved by the enterostomy. This I would consider life-saving. In the April 22, 1922, number of the *Annals of Surgery*, Van Buren differentiates sharply between acute intestinal obstruction and acute ileus.

3. The rolling out of the mucous membrane converted the small opening into a large one, many times the size. I. W. Long of Greensboro, N. C.:

- (a) Opening made with cautery.
- (b) Tube not sutured to gut.

DR. R. E. FARR begged to call attention to the work that Coffee did. Coffee called attention to the fact that if drainage is brought down to the point of closure in these fistulae healing is likely to fail. His technic, described in 1907, is as follows: Wide separation of the layers, made down to the peritoneum, which is not opened. The edges of the fistulous tract are cut away and the abdominal wall is re-established, turning in the different layers and overlapping them. Drainage is provided for at the angles of the incision, as far from the fistulous tract as possible. I have seen Dr. Coffee do this operation and he reports that in cases that are not tuberculous his failures have been almost nil.

One more practical point regarding the making of enterostomies. If we paint the skin with several layers of rubber cement we can prevent digestion.

CHOOSING ANESTHESIA FOR GENERAL SURGERY.

DR. J. E. HAYES read a paper with the above title, for which see page 28.

DR. R. E. FARR discussed it as follows:

I think we should feel pleased to receive a paper of this nature from Dr. Hayes, when we consider where he received most of his training in the use of local anesthesia. Less than three years ago the sentiment at the institution where Dr. Hayes trained was very much different from what it is at present, and it is worth while to think of the change of attitude that has come in these two or three years in relation to the anesthesia problem.

I have considered the advantages of local anesthesia for years in papers and discussions and I wish to confine my remarks tonight to the practical aspects of the subject. I like to consider local anesthesia from three standpoints: first, safety; second, efficiency; and, third, comfort. With relation to safety I believe it is admitted that local anesthesia is the safest anesthetic for the patient. The controversy hinges upon its efficiency. The question of comfort is important, but I wish to confine my remarks to the question of efficiency.

Observation of the work being done all over this country would seem to indicate that men are performing all operations under local anesthesia, where they can do so with efficiency, although in discussing the subject few will admit this fact. Take the operation for inguinal hernia, for instance. This operation is frequently performed under local anesthesia and yet the patient who is the subject of inguinal hernia is, as a rule, one of our best surgical risks, the only indication for using local anesthesia here being because of its efficiency and comfort. Such operations as radical excision of the breast, cholecystectomy and hysterectomy demand much more care in the choice of an anesthesia, and were it admitted that local anesthesia is efficient in these cases it would undoubtedly be the anesthetic of choice here as it is for hernia operations. The question is, can we do most of our major surgery under local anesthesia? Here I must take issue with the writer

of the paper. I believe that I have proven conclusively that it is possible to perform most of the major operations with entire success under local anesthesia and without pain to the patient.

The doctor mentions psychic strain, and I would call his attention to the fact that this particular factor gives us very little trouble. We have indeed in many cases used local anesthesia entirely against the patient's request and more especially against the request of friends of the patient, and in repeated instances have carried out the operation over the patient's protest under the subterfuge that only preparation for the operation was being made. Dr. Maxeiner and I have repeatedly done this and we believe that it is one of the most excellent ways of establishing favorable propaganda for the method because these patients at once become our allies.

Another point upon which I would disagree with the writer to some extent relates to the technic of obtaining anesthesia. Undoubtedly conduction anesthesia may be employed if one is skillful enough to use it successfully. I believe, however, that we must sacrifice the ideal for the practical in case we expect to bring the greatest good to the greatest number because the refinement of conduction anesthesia will long remain in the hands of the expert, and for this reason the benefits of local anesthesia will be denied our patients. The fact is, there is not enough of him to go around.

With relation to healing, I can only say that I have had much better wounds since using infiltration anesthesia than I had when using general anesthesia. Toxicity is practically never seen after infiltration anesthesia, while under paravertebral anesthesia and the more refined methods a number of toxic cases have been reported. When one considers the amount of novocain solution that Dr. Crile has injected into the tissues without ill effect it makes one feel that he must look further for the cause of the failure of wound healing. A simplified anesthesia technic of such a nature as to allow the use of local anesthesia will be our sheet anchor in applying this method in the future.

DR. S. R. MAXEINER, in discussing Dr. Hayes' paper, spoke as follows:

It seems to me that in the city and in large hospitals where we have trained and experienced anesthetists for general anesthesia, the use of local anesthesia is not so imperative, but in the smaller communities perhaps where an inexperienced nurse or even the druggist may be depended upon to administer a general anesthetic we must consider local anesthesia much safer than general anesthesia as a routine procedure. We find men in the clinics and small hospitals in the smaller communities who are doing gallbladders and other major operations under local anesthesia with most excellent results, many of these men having been driven to local anesthesia by the handicap of poor anesthetists.

In case the appendix, gall bladder or other operation has been done successfully under local and it is found necessary to make a wide abdominal exploration, general anesthesia might be given as an adjunct for five or ten minutes,

thereby minimizing the amount of general anesthesia required.

The use of local anesthesia depends largely upon the proficiency of the surgeon. He tries it at first in his minor operations and as his ability and experience increase he gradually applies it to appendices, gallbladders, etc., and finds that as he develops he will be less often compelled to use general anesthesia as an adjunct.

It is equally important that after-pain be prevented in patients operated upon under local anesthesia because of the fact that they are thoroughly conscious immediately following their operation, while the patient operated upon under general anesthesia may have an analgesia for several hours.

Frequent statements are made that the mortality for local anesthesia is higher than that for general anesthesia. This can only be accounted for in view of the fact that local anesthesia is used most frequently in cases in which the patient is too sick to take general anesthesia and frequently is in a moribund condition.

The fatalities under local anesthesia have occurred largely in nose and throat work where a short, fine needle is used and a large quantity of anesthetic solution is injected directly into the tissue without moving the needle. The accidents here are due to an intravenous injection and this may be prevented by aspirating with the syringe before the injection is made, or by moving the point of the needle back and forth during the injection. One other cause of accident is a mistake in the strength of the solution used, the toxicity of this group of drugs being directly proportionate to the strength of the solution used. In a series of alternate cases of similar character the mortality from local anesthesia will be found to be much lower than that from general anesthesia.

DR. ARTHUR F. BRATRUD continued the discussion:

The question of anesthesia is one that confronts us every day and should be considered of prime importance in every surgical condition. The mortality from general anesthesia under ether has been stated to be 1-10,000, under chloroform 1-5,000 and under gas 1-300-500. Salzer and Stewart recently collected a large series of cases and in this series of cases the death rate averaged 1-600-700. These cases comprised different types of work, both major and minor. Where trained anesthetists are available in well organized hospitals, the death rate is very small from any anesthesia, but it is in the districts where trained anesthetists are not available, where facilities are lacking to determine the exact condition of the patient, that the high mortality results.

One question to my mind is how long after an operation can we attribute a death to the anesthesia—whether immediately at the time of operation, or within a few hours, or within a few days. With any general anesthesia, be it ether, chloroform or gas, there is an increased retention of nitrogen in the blood with a lowered carbon dioxide combining power of the blood. In diabetic cases there is an increase of blood sugar in the blood when any general anesthesia is given. There is a lowered carbon dioxide combining power of the blood varying from 4 to 7 per cent under ether anesthesia, the anesthesia varying in duration

of time from 27 minutes to one hour. This is much less under gas or spinal anesthesia. The mortality of surgical diabetic patients can be greatly reduced under local anesthesia, which was proven at Rochester, Minnesota, when the death rate was reduced from about 12 per cent to 6 per cent.

In regard to any anesthesia—three things are of prime importance: The kind of anesthesia to be used, administration, and pathologic and physiologic condition of the patient. In regard to the first, there is no question in my mind but that novocain has proven itself to be one of the safest of all anesthetics. Where deaths are present, they can often be traced to faulty administration; for example, the injection of the solution with the needle remaining stationary, thus violating one of the first principles pertaining to this type of anesthesia. The pathologic and physiologic condition of the patient must be known in any case whether the anesthesia given be a general or a local. It is much better to be conservative. Several operations under local anesthesia are much less to be dreaded than one operation under general anesthesia providing this is satisfactorily performed.

In regard to methods, the simplest method is the safest and the best. Several years ago I tried paravertebral and trans-sacral blocking anesthesia, but on account of the great difficulty in performing this type, as well as the large per cent of failures, I gave it up. I have been doing more local infiltration during the past few years and find that success is obtained in a larger per cent of cases with added experience. Knowledge of anatomy is absolutely essential in any type of local anesthesia. Preparation of solution is of prime importance. I think there is only one way to prepare the solution, and that is to prepare the novocain in stock solution in a certain strength, preferably 1 or 2 per cent Ringer's solution. No adrenalin should be added to the novocain before the sterilization. The solution should be sterilized in the autoclave before using. Repeated sterilizations have a tendency to make the solution weaker. I have had three cases which showed a very marked reaction following novocain which was made up from the dental tablets. There is a toxic product formed by boiling novocain and suprenin. The cases which had the reaction showed a most profound toxemia within twenty-four hours. Edema surrounding the wound was marked. There was marked distention and diarrhea present, also very high fever. No organism was found present in culture from wound.

When the solution is properly injected underneath the skin there should be no pain. Intravenous administration is the most dangerous and should be avoided by all means. Adrenalin should be used with judgment. In old people, where marked emaciation is present, much less adrenalin is required. Not more than four drops to the ounce should be used in any case.

In cases of hyperthyroidism not more than one or two drops of adrenalin to the ounce should be used, as these people may develop a positive Goetch test on the table.

DR. H. B. SWEETSER, in closing the discussion, stated:

I like to operate under local anesthesia if I know just what I am to do and if I am familiar with the exact tech-

nic. Operations for hernia and interval appendectomy lend themselves nicely to local anesthesia. Under certain conditions, I am convinced that local anesthesia is not preferable to general. First, one must be efficient in giving local anesthesia. Whether the average man can become efficient or not, I do not know. We go to medical meetings and we hear men talk about what they do under local anesthesia, but if you visit their clinics you are liable to discover that they do not do the things they talk about. For instance, at one clinic I visited, a man was being operated upon and was making a great deal of noise and complaint. The operator kept on, however, for three quarters of an hour under local and then gave up and switched to ether. That patient is practically against local anesthesia. It does not work out. I do not think I am of the temperament that can go ahead and do an operation when the patient is in pain, and if you are as slow an operator as I am, I do not think you would use local anesthesia in all cases. At one time I heard one of Dr. Blank's patients say to the anesthetist, "Is he nearly through? I wish he was through." This patient was probably in pain but was made to believe that he was not.

Concerning infections and especially pulmonary complications following operation: My impression, gained from my own experience and from observations of other clinics, is that operation under local anesthesia does not by any means prevent these complications, although they may not be so numerous. An article in the Archives of Surgery of June, 1920, by Cutter and Hunt, based on a study of 1,512 cases, gives the morbidity rate following ether as 3.39 per cent; for gas-oxygen 4.24 per cent; and for procain, 1.63 per cent.

In diabetics, if the patient can be made sugar-free, then apparently general anesthesia may be safely given. I have recently prostatectomized under general anesthesia a man 67 years old whom we made sugar-free, and there was no return of sugar and healing was very prompt.

Regional anesthesia is difficult and requires considerable technical skill, and I should think would be dangerous in certain localities, as about the abdominal splanchnic ganglia. It will take long to make local a competitor of general anesthesia and I do not think it has given a lessened mortality so far.

Spinal anesthesia is very efficient, but unfortunately carries considerable danger.

I appreciate that local anesthesia has many advantages, but it must also be admitted that it has disadvantages which will always prevent it from entirely supplanting general anesthesia.

NEW AND NON-OFFICIAL REMEDIES

During November, the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

LEDERLE ANTITOXIN LABORATORIES:

Mercurialized Serum-Lederle for Intravenous Use.

CHARLES LEICH & Co.:

Sulfarsenol.

MALLINCKRODT CHEMICAL WORKS:

Barium Sulphate Pure-M. C. W.

H. A. METZ LABORATORIES:

Benzosol.

PARKE, DAVIS & Co.:

Silvol.

Arsenobenzol-Dermatological Research Laboratories and Arsphenamine-Dermatological Research Laboratories: These products are now marketed by the Abbott Laboratories as Neoarsphenamine-D. R. L. and Arsphenamine-D. R. L. The Council has continued the acceptance for New and Non-official Remedies under these names.

Tetanus Antitoxin, Purified.—A tetanus antitoxin, concentrated (New and Non-official Remedies, 1922, p. 281), that is also marketed in syringe containers of 10,000 units. E. R. Squibb & Sons, New York.

Staphylococcus Vaccine.—This product (New and Non-official Remedies, 1922, p. 306) is marketed in packages of four syringes containing, respectively, 100, 250, 500 and 1,000 million killed staphylococcus aureus and staphylococcus albus in equal proportion; in packages of four ampules containing, respectively, 100, 250, 500 and 1,000 million killed staphylococcus aureus and albus in equal proportion (with syringe); and in vials of 5 c.c., 10 c.c. and 20 c.c., each cubic centimeter containing 5,000 million killed staphylococcus aureus and staphylococcus albus in equal proportion. E. R. Squibb & Sons, New York.

Streptococcus Vaccine.—This product (New and Non-official Remedies, 1922, p. 308) is marketed in packages of four syringes containing, respectively, 100, 250, 500 and 1,000 million killed streptococci; in packages of four ampules containing, respectively, 100, 250, 500 and 1,000 million killed streptococci (with a syringe); and in vials of 5 c.c., 10 c.c. and 20 c.c., each cubic centimeter containing 1,000 million killed streptococci. E. R. Squibb & Sons, New York.

Typhoid Vaccine.—This product (New and Non-official Remedies, 1922, p. 310) is marketed in packages of four syringes containing, respectively, 100, 250, 500 and 1,000 million killed typhoid bacilli; in packages of four ampules containing, respectively, 100, 250, 500 and 1,000 million killed typhoid bacilli (with syringe); and in vials of 5 c.c., 10 c.c. and 20 c.c., each cubic centimeter containing 1,000 million killed typhoid bacilli. E. R. Squibb & Sons, New York.

Typhoid Vaccine Combined, Immunizing.—A typhoid vaccine (New and Non-official Remedies, 1922, p. 310) that is marketed in packages of three syringes, one containing 500 million killed typhoid bacilli and 375 million each of killed paratyphoid A and paratyphoid B bacilli, and each of the other two syringes containing 1,000 million killed typhoid bacilli and 750 million each of killed paratyphoid A and paratyphoid B bacilli; in packages of three ampules containing, respectively, the same dosages as the three-syringe package (with a syringe); in packages of 30 ampules, hospital size; and in vials of 5 c.c., 10 c.c. and 20 c.c., each cubic centimeter containing 2,500 million killed bacilli. E. R. Squibb & Sons, New York.

Staphylo-Acne Vaccine.—A mixed bacterial vaccine (New and Non-official Remedies, 1922, p. 314) that is marketed in packages of four syringes, the first containing a mixture

of 50 million each of killed staphylococcus albus, of killed staphylococcus aureus and of killed acne bacilli; the second containing a mixture of 125 million each of killed staphylococcus albus, of killed staphylococcus aureus and of killed acne bacilli; the third containing a mixture of 250 million each of killed staphylococcus albus, of killed staphylococcus aureus and killed acne bacilli; the fourth containing 500 million each of killed staphylococcus albus, of killed staphylococcus aureus and of killed acne bacilli; in packages of four ampules containing the same dosage as the four-syringe package (with a syringe); and in vials of 5 c.c., 10 c.c. and 20 c.c., each cubic centimeter containing 1,500 million killed bacteria. E. R. Squibb & Sons, New York.

Colon Vaccine.—A colon bacillus vaccine (New and Non-official Remedies, 1922, p. 299) that is marketed in packages of four syringes containing, respectively, 100, 250, 500 and 1,000 million killed bacilli; in packages of four ampules containing, respectively, 100, 250, 500 and 1,000 million killed bacilli (with a syringe); and in vials of 5 c.c., 10 c.c. and 20 c.c., each cubic centimeter containing 5,000 million killed bacilli. E. R. Squibb & Sons, New York. (Jour. A. M. A., Nov. 4, 1922, p. 1609.)

Barium Sulphate Pure-M. C. W.—A brand of barium sulphate for Roentgen-ray work—N. N. R. (See New and Non-official Remedies, 1922, p. 62.) Mallinckrodt Chemical Works, St. Louis.

Benzosol.—A brand of guaiacol benzoate—N. N. R. (New and Non-official Remedies, 1922, p. 92). H. A. Metz Laboratories, Inc., New York.

Normal Horse Serum-P. D. & Co.—This product (New and Non-official Remedies, 1922, p. 278) is marketed in packages containing one 10 c.c. syringe container (Bio. 50); in packages containing one 10 c.c. rubber-stoppered bulb (Bio. 52); and in packages containing one 30 c.c. rubber-stoppered bulb (Bio. 53). Parke, Davis & Co., Detroit.

Rabies Vaccine (Cumming).—An antirabic vaccine (New and Non-official Remedies, 1922, p. 290). The virus is prepared by dialyzing a 1 per cent suspension of brain tissues (from a rabbit dying of rabies induced by an injection of fixed virus) against running distilled water until the active virulent virus is destroyed. The treatment is divided into two classes: mild, requiring 14 doses; severe, requiring 21 doses. One dose, 2 c.c., is given daily over a period of either 14 or 21 days. Each package (Bio. 440) consists of seven syringe containers of 2 c.c. each (1 dose). Parke, Davis & Co., Detroit.

Sulfarsenol.—*Sulpharsphenamine.*—Chemically, sulfarsenol is closely related to neoarsphenamine. It contains from 18 to 20 per cent of arsenic. The arsenic content of three parts of sulfarsenol is approximately equal to two parts of arsenamine. The actions, uses and dosage are essentially the same as neoarsphenamine, but it is claimed to have the advantage over neoarsphenamine in that its solutions are more stable and in that it may be administered subcutaneously. Sulfarsenol is marketed in ampules containing, respectively, 0.06 gm., 0.12 gm., 0.18 gm., 0.24 gm., 0.30 gm., 0.36 gm., 0.42 gm., 0.48 gm., 0.54 gm., 0.60 gm. Chas. Leich & Co., Evansville, Ind. (Jour. A. M. A., Nov. 18, 1922, p. 1767.)

PROPAGANDA FOR REFORM

Abrams' "Oscilloclast."—This is a piece of electrical apparatus which is said to produce vibrations of varying rate. Its use is based on Abrams' theory that "specific drugs possess a like vibratory rate as the diseases for which they are effective." Instead of using a drug, one starts the "Oscilloclast" going, moves the indicators to the number corresponding to the vibration rate of the indicated drug, and applies the instrument to the sufferer, who, it is alleged, then gets the therapeutic action of the drug in question. The "Oscilloclast" is not for sale. It may be leased (for about two hundred dollars) on signing a contract that the instrument will not be opened. Within the past few months Abrams has been making bids for osteopathic patronage. The followers of the cult have not been slow to respond. The lure of the dollar and the bizarre is irresistible. Many of the lessees of the "Oscilloclast" are individuals who for years have lived in what may be called the twilight zone of professionalism, where it is difficult to distinguish between the visionary with a fad and the quack or near-quack with a scheme. (Jour. A. M. A., Nov. 4, 1922, p. 1626.)

Caroid.—This is a preparation of papain (obtained from papaya). Caroid was first marketed by the American Ferment Co. and later by Mead Johnson & Co. For a considerable time the Council on Pharmacy and Chemistry had Caroid under consideration and in the end rejected the product on account of its variability. Although Caroid was found more active than other preparations of papain, examination showed that the claims for its digestive efficiency were exaggerated. Since the publication of the Council's report in 1914, Mead Johnson & Co. do not seem to have made any propaganda for Caroid. It is now being promoted by the American Ferment Co., but this firm has not requested a consideration of the product by the Council. (Jour. A. M. A., Nov. 4, 1922, p. 1629.)

PROGRESS

Abstracts to be submitted to Section Supervisors.

MEDICINE

SUPERVISORS:

F. J. HIRSCHBOECK,
FIDELITY BLDG., DULUTH
THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

PANCREATIC EXTRACTS IN THE TREATMENT OF DIABETES MELLITUS—Banting & Best (Canadian Med. Ass'n Jour., March, 1922): Since 1899, when it was found that total removal of the pancreas in dogs caused fatal diabetes, investigators have endeavored to obtain beneficial effects by feeding pancreas or pancreatic extracts to the human afflicted with the disease. It was soon found, however, that results were negative, or in some instances even harmful.

Banting and Best had previously contended that satisfactory results were impossible with pancreatic extract on account of the destruction of the active principle by the digestive enzymes. Through their experimentation they

have found that the acinous tissue degenerates seven to ten weeks after ligation of the pancreatic duct, whereas the insular tissue does not. By using extracts made from pancreatic tissue ten weeks after ligation of the duct, they were able, in diabetic dogs, to cause a marked reduction in the blood sugar. Extract of liver or spleen had no effect. Later experiments proved that the pancreas of fetal calves of under five months' development did not contain proteolytic enzyme whatever. By extracting such fetal pancreatic tissue a relatively easily procurable and highly potent preparation was obtained. It was found that the life of a completely diabetic dog was prolonged to seventy days with the injection of this fetal calf extract. Allen had previously stated that in his experience completely diabetic dogs did not live more than fourteen days.

The preparation of an extract of this kind at once permitted Banting and Best to apply the extract in clinical experimentation on the human, and experiments were at once performed on seven cases of diabetes mellitus in the wards of the Toronto General Hospital. Ordinary and clinical laboratory examinations were made on all the patients. Certain definite results were at once noticed, and the effect observed in each pancreatized animal has been paralleled in man. A fall in blood sugar occurs, with coincidentally a rise in the respiratory quotient. The subjective symptoms disappear very promptly. The sugar excretion in the urine decreases, or, if the proper dosage is attained, disappears entirely. Ketouria is abolished. The effect is by no means permanent, and the treatment must be repeated from time to time.

Banting and Best are continuing their experiments, and the preparation is being employed in other clinics in this country, and in due time something definite and beneficial will undoubtedly develop from this hope for diabetics.

DR. F. J. HIRSCHBOECK.

ABSTRACTS FROM AMERICAN PROCTOLOGIC SOCIETY, ETC.—

PRESIDENTIAL ADDRESS—SOME OBSERVATIONS, CHIEFLY CLINICAL, ON INFECTIONS OF THE RECTUM AND ADJACENT STRUCTURES, WITH SPECIAL REFERENCES TO PRURITUS—Granville S. Hanes, Louisville, Ky.: Instead of the usual type of presidential address, relating to the policies of the society, the writer presented a scientific paper, which contained the results of his clinical studies of pruritus ani. He believed that pruritus and many other ano-rectal conditions are bacterial in origin, and, having found that a probe could be passed easily under the skin of and about the anus in so many patients, he concluded that there were potential cavities for harboring such bacteria. Knowing the futility of much of the ordinary treatment of pruritus, he conceived the idea of introducing into these cavities, hypodermically, some agent to destroy the infection. He experimented unsatisfactorily with various materials, but finally, having several cases in which stomach analysis showed deficient hydrochloric acid and believing that this natural product of the body undoubtedly protected the stomach from the invasion of ingested bacteria, it occurred to him that this might be the bactericidal agent he sought. Accordingly, he tried it in varying strengths until he obtained the best results,

without unpleasant effects, with solutions of 1 to 2,000 and 1 to 3,000, preceded by solutions of $\frac{1}{2}$ per cent novocain to prevent the pain from the use of the acid. The pruritus was relieved at once and permanently in all cases. He at first injected only under the skin, but found that, if the acid were carried high under the ano-rectal mucosa, the results were much enhanced. He found also that hydrochloric has a remarkable effect in softening fibrous deposits, as in strictures and about old fistulous tracks, some of which were cured; that chronic infection of the anal tissues was cured, the sphincters becoming less irritable and constipation and reflex symptoms improving; that hemorrhoids were reduced and cured with the bleeding therefrom, and that prolapse in cases previously operated on unsuccessfully disappeared. His success in this work led to his using hydrochloric acid in the treatment of other conditions with most satisfying results.

THE ETIOLOGY AND PATHOGENESIS OF PRURITUS ANI AND ANAL PRURITUS—Joseph F. Montague, New York, N. Y.: The writer considered that all cases of pruritus of the anus could be clinically divided into two classes: 1. Direct pruritus of the anus, due to direct irritation of the peripheral nerve endings in the pruritic zone with consequent primary pathology. The direct nature of this can be demonstrated by the abolition of pruritic sensation by local anesthetization, nerve blocking, or superficial neurotomy. 2. Indirect pruritus of the anus, due to the misreference of irritable stimulus from elsewhere to, and conscious perception in, the pruritic zone, which at first is devoid of pathology. A desire to scratch is produced, which leads first to a traumatic and then to an infective chronic dermatitis, i.e., a superimposed direct pruritus. The early indirect nature of this may be demonstrated by the lack of abolition of pruritic sensation by local anesthetization, etc., and by the discovery of the irritable stimulus. Temporary relief may be obtained by treatment of the direct component, but the indirect component remains and will cause recurrence. On this hypothesis a working basis for treatment may be established. Finally, the writer said that he was forced to the conclusion that direct pruritus is a distinct clinical entity, and indirect pruritus a symptom of another disease, and, for differentiation, suggested for the former the name of Pruritus Ani and for the latter the name of Anal Pruritus.

OFFICE CARE OF ANO-RECTAL CASES—William M. Beach, Pittsburgh, Pa.: The writer said that he did not wish to minimize the importance of ano-rectal disease by discussing the office care of it, but that one was often compelled to meet the demand of patients for such treatment. Proper persuasion should be used to induce those, who ought to go to the hospital, to do so. Their decision depends much on one's approach in examination. To this end are necessary suitable office equipment, quietness, painlessness, and caution in handling, no undue exposure and reassurance when the patient is nervous. The results will determine the appropriateness for office treatment; and under this head the writer considered such care of fissure, hemorrhoids, proctitis and sigmoiditis, ulcerations, constipation, etc. Finally, he said that the object of his paper

was to encourage the proctologist to do more for patients in the office before resorting to radical procedures, and to elicit discussion on the more frequent, rather than on the more infrequent and obscure ano-rectal diseases.

THE DIAGNOSIS OF CANCER OF THE RECTUM AND SIGMOID—Daniel Morton, St. Joseph, Mo.: The writer said that there is no first symptom of cancer of the rectum, but rather a fairly constant symptom-complex consisting of a sudden unaccountable "initial constipation," followed by a "morning diarrhea" and in six to nine months bloody stools. The symptoms vary, as stated by Goodsell and Miles, according to the progress of the disease, i.e., prior to surface disintegration, during surface disintegration, during infiltration and perforation of rectal wall, during almost complete occlusion, and during metastases to other organs. The chief symptoms of every case are constipation, diarrhea, pathologic stools, pain, loss of weight and constitutional disturbances. A thorough examination should include careful clinical history of patient, examination of stools, digital examination of rectum, digital examination of vagina, bi-manual examination of rectum, procto-sigmoidoscopic examination, biopsy (?), possible exploratory laparotomy, differential diagnosis, and x-ray examination. A differential diagnosis must be made from hemorrhoids, blind internal fistula, polypi, superior pelvic abscess, intussusception, tumors outside rectum, diverticulosis, syphilis, tuberculosis, actinomycosis, villous tumor, and fibrous stricture. Cancer statistics seem to show that 50 per cent of all cancers attack the alimentary canal, and 6.2 per cent the rectum, and that, of those in the alimentary canal, 16 per cent attack the sigmoid and rectum. In Herman's statistics of 20,054 cases of all cancers, 12,004 were in the rectum. One must think of cancer of the rectum in terms of hundreds and thousands, and not as an occasional finding. Hence the importance of its diagnosis. Finally, the writer said that the usual late diagnosis may be the patient's, the doctor's, or neither's fault, but rather the result of our lack of knowledge of cancer here as everywhere.

A CASE OF TUBERCULOUS ENTERITIS TREATED BY INTRA-PERITONEAL INJECTIONS OF OXYGEN—

John L. Jelks, Memphis, Tenn.: The writer reported this case and the result of treatment because of the apparent hopeless condition, the little post-operative discomfort occasioned, and the immediate improvement and rapid cure from two injections; and also because the treatment and result are both contrary to the ideas conveyed by laboratory study of the tubercle bacillus. The free fluid was first withdrawn through a cannula which was fixed by a purse-string suture. The quantity of oxygen was measured only by the tolerance of the patient, as indicated by no undue embarrassment of respiration. The incisions down to the peritoneum were made in each treatment under novocain analgesia without pain. The patient felt a sense of well-being and buoyancy, the diarrhea, which had amounted five to thirty dejections daily, was immediately controlled, the temperature became normal, and even the lung lesions rapidly cleared; and the woman is now reported by the internist and the attending physicians of the sanatorium for tuberculosis as entirely well. Whether the results were

obtained by stimulation of the endothelium with oxygen, by increase of antibodies in the supersaturated blood and tissues, or by direct effect on the tubercles, the writer offered as suggestion and food for thought.

A METHOD FOR CHARTING PROCTOLOGIC CASES—Collier F. Martin, Philadelphia, Pa.: The writer described the method of charting, which he uses in his cases and in instruction of students. His diagram consists of three concentric circles, respectively, $2\frac{1}{2}$, $1\frac{1}{2}$ and $\frac{5}{8}$ inches in diameter. The outer represents the lower cutaneous border of the anus, the middle the ano-rectal line, and the inner the recto-sigmoidal junction. Recently a dotted circle has been added just internal to the ano-rectal line, the space between representing the hemorrhoidal area. Four quadrants are designated by the letters, R, A, L, and P, meaning right, anterior, left and posterior; but, no radiating lines are drawn, as in the Jackson chart, of which this is a modification, since they are found to be confusing. The diagram is large enough to give ample space between the lines to note various pathologic lesions in their appropriate areas by means of certain arbitrary signs, these being so significant that they are easily remembered by the student. This form is printed on the general history chart to expedite the taking of records. Smaller sheets of paper with the same diagram are given to the students during the clinical hour, so that they may record any treatment or additional pathology, and are returned with the history chart, so that any necessary information may be recorded. A rubber stamp also is used with the same diagram, so that old history charts can be brought up to date and additional notes made.

SURGERY

SUPERVISORS:

E. MENDELSSOHN JONES,

LOWRY BLDG., ST. PAUL

VERNE C. HUNT,

MAYO CLINIC, ROCHESTER

THE THIERSCH GRAFT IN THE RADICAL CURE OF FRONTAL SINUS AND MAXILLARY ANTRUM DISEASES—J. E. Sheehan (Surg., Gyn. and Obst., September, 1922): Sheehan writes of the use of Thiersch grafts in the mucous membrane lined cavities of the head. In the antrum he follows the method of Denker, thoroughly curettes out the granulation tissue and diseased mucous membrane, and, after drying the surface, applies Thiersch grafts, which are held in place by cotton pledgets. These are removed in six days and irrigations started in ten days, but not before.

He has used a similar procedure in the frontal sinus. Here the operation is done by the method of Lothrop and a skin graft inserted which is held in place by a small pledget of cotton. This is removed in 5 or 6 days.

In cicatricial conditions of the mucous membranes of the lips success has been secured by first dissecting out the scar and then covering the area with skin grafts, which are held in place by a prepared mold. The tissues are

lightly sutured together over this in order to prevent motion and may be freed again in 5 or 6 days.

Sheehan has tried the skin grafting of tonsillar cavities after tonsillectomy and, while encouraging results have been secured, he considers it an experimental procedure.

In general, this method has given entire satisfaction with quick and permanent improvement in long standing suppuration and at the same time a minimum amount of scar tissue formation.

DONALD K. BACON.

SCOLIOSIS ACCOMPANYING CHRONIC INFECTED OPEN PNEUMOTHORAX — ITS CAUSATION AND CORRECTION — F. B. Gurd (Arch. Surg. 5, 2, Sept., 1922): Gurd calls attention to the spinal deformity which develops as a result of long-continued suppuration of large cavities in open pneumothorax. This takes the form of a scoliosis pointing toward the sound side.

In these cases he finds that the diseased lung is firmly bound down by the adhesions which form in empyemas of long standing and that nature attempts to obliterate the dead space by approximating the chest wall to the fixed lung. This results in a falling of the anterior extremities of the ribs so that their horizontal direction becomes more vertical; the intercostal spaces become obliterated and the ribs overlap one another. The shoulder on the affected side drops from 2 to 4 cm. or more, and the middorsal and lower dorsal spine are pushed over to the unaffected side. The deviation of the spinous processes from the midline may be 3 cm., or more.

Gurd has relieved the condition by operation on the infected cavity. He makes an incision over the ninth rib from the anterior axillary line, backward to the angle of the scapula, where it curves upward to about the level of the spine of the scapula and ends midway between the scapula and the spinous processes. From 10 to 15 cm. of the eighth and ninth, and occasionally of the tenth rib, are removed, together with the intervening intercostal tissues and the underlying thickened parietal pleura. Dakin's solution irrigation is carried out for 2 or 3 weeks and then at a second operation, 5 to 7 cm. of the seventh rib is excised, and the sixth, fifth, fourth, and, occasionally, the third ribs are sectioned. This has invariably served to straighten the spine by removing the pressure and at the same time has given the empyema cavity every opportunity to heal.

DONALD K. BACON.

PEDIATRICS

SUPERVISORS:

FREDERICK C. RODDA,

CHILDREN'S CLINIC, MINNEAPOLIS

ROY N. ANDREWS,

MANKATO CLINIC, MANKATO

EFFECTS OF DRINKING LARGE AMOUNTS OF ORANGE JUICE AND SOUR MILK—Blatherwick and Long (Jour. Biological Chem., Vol. 53, p. 103-110): The

results of these experiments performed on adults are of decided pediatric interest. The ingestion of large amounts of orange juice produced alkaline urines, an increased organic acid excretion, and a decreased ammonia content of the urines. Lactic acid milk on the contrary produced strongly acid urines. The increased acidity is due to an increased excretion of acid phosphate. Organic acid excretion was not increased.

ROOD TAYLOR.

NASAL SINUS DISEASE IN CHILDREN—Mitchell & Shea (Archives of Pediatrics, Vol. 39, No. 4) draw attention to the large number of sinus infections seen in children today, and believe that most of the so-called influenza cases are infections of the nasal sinus. Also that the adenoid cases coming to reoperation because of failure to obtain relief from nasal obstruction or persistent colds will upon examination be found to fall into this class of infection. They further point out that, due to the close relationship of the sinuses to the pulmonary tract through the lymphatic system, the pediatricist and practitioner are apt to be misled in diagnosis. Disease of the sinuses was most common between two and four years,—their youngest patient being nine months of age. Sex played little if any part; the greatest number of cases were found in the spring and fall—a changeable climate being productive of acute infections of the sinuses. They further advise against chilling, etc., and believe that too many people have become fresh-air fiends—that a nursery temperature below 65 degrees predisposes to the infection. Hypertrophy of the tonsils and adenoids may affect the sinuses by: (1) blocking, (2) spread of infection to the sinuses through lymphatics, and (3) by direct extension of the inflammation. Influenza appears to have a predilection for infecting the sinuses.

The patient seldom gives as the chief complaint a symptom which is a direct accusation of the sinuses, but is more apt to be referred to the throat or lungs. A careful history and examination is therefore necessary in the diagnosis. Treatment must be carried out from the medical point of view, and also from the rhinological standpoint,—removal of the tonsils and adenoids usually sufficing; the judicious use of suction and nasal irrigation sometimes being necessary to prevent the acute case from becoming chronic.

E. F. ROBB.

DIAGNOSIS OF NASAL SINUS DISEASE IN CHILDREN—H. B. Lemere (Arch. of Ped., September, 1922): In 1914, Oppenheimer, writing on children, says that many instances of post-nasal catarrh are but evidence of inflammatory conditions of the adjacent sinuses and states that maxillary sinusitis is too often unrecognized and treated as nasal catarrh.

It seems to the author that the reason that this most important element in children's health has been neglected is that the pediatrician has considered it a pure rhinological problem, whereas the initiation of the diagnosis must come from the pediatrician in almost every instance. These children may have persistent cough, lack of initiative, anemia, arthritis, chronic digestive disturbance, irritability, loss of appetite, headache and dizziness. The symptoms

are almost always subjective. In children under seven years, headache is rarely complained of. Pain and tenderness over the forehead are frequently the main symptoms of antrum disease.

The author considers the condition of the posterior pharynx of very great importance in the diagnosis of the same. A persistently red and swollen posterior pharyngeal wall where it is posterior and internal to the posterior tonsillar pillar is pathognomonic of sinus affection. This is particularly true if the adenoids and tonsils have been removed. The throat is seen as a reddened membrane thrown into many vertical folds on the act of gagging. The discharge in sinusitis is usually mucopus, in which pus or mucus predominate in varying proportions. The same is often extremely scant in little patients of the asthenic type, unless an acute attack is in evidence.

The submaxillary and cervical glands can be palpated and during an attack are visibly swollen. The tonsils, if present, show disease and enlargement. There is a general listlessness, loss of appetite, nervous irritability and loss of weight.

Otorrhea may be present and has a very close relationship to chronic antrum infection. He frequently observes the connection of acute and chronic middle ear suppuration to chronic antrum condition. The antrum infection is the primary one and may exist for years before the ear involvement. Cough is sometimes very persistent and even attacks of asthma suggest a sinus infection. The prompt disappearance of these symptoms when the diseased sinus is treated suggests that the bronchial pathology is mainly secondary to the sinus disease.

The evidence provided by the x-ray only reaches its maximum value if interpreted by one who is familiar with the clinical findings. The x-ray properly read with a knowledge of the clinical symptoms and of the pathology of the nose, including the stage of development of the sinuses, is one of our most reliable means of diagnosis.

This subject is still comparatively unexplored, but it has been the author's experience that these mild cases of sinusitis can be very greatly benefited by local treatment without operation. This does not apply to the marked purulent conditions in which operation is necessary.

R. N. ANDREWS.

CONGENITAL HYPERPLASTIC PYLORIC STENOSIS—Dudley W. Palmer (*Arch. of Ped.*, September, 1922): Pyloric stenosis of infancy or hyperplastic pyloric stenosis is a well established entity whose symptomatology is explosive vomiting, gastric waves, and a pyloric tumor. Pylorospasm and hyperplastic pyloric stenosis is one and the same condition. The lumen of the pylorus of a newborn infant is about the size of a lead pencil.

In every case that has been operated by the author he has noticed more or less edema of the pylorus. It is largely this edema that gives the tumor the "cartilage feel" and makes it more pale in color than the adjacent stomach or duodenum. It is so edematous that it is impossible to place a cat-gut ligature in the tissue without tearing. The author believes that all cases with the symptom-complex of explosive vomiting and gastric waves are cases of pyloric sphincter hyperplasia of more or less degree, on top of

which is ingrafted a variable edema. The use of the duodenal tube as a method for estimating the degree of patency of the pylorus is most excellent and in his opinion may indicate the degree of obstruction due to hyperplasia and edema.

The evidence of dehydration or starvation as noted in the feel or appearance of the skin, the sunken fontanels, the concentrated urine or the almost meconium-like stools, are the signs for urgent surgery, and signs which should not be waited for. No infant, I believe, is in such bad condition but that a day spent in getting fluids, alkalies, and glucose into its body will improve its condition and lessen the surgical risk. A five per cent glucose solution per rectum is also of great value, both pre-operative and post-operative, wherever starvation is a prominent feature. Gastric lavage with soda solution should be resorted to before operation. The feedings are continued regularly up to the time of operation in the hope that some of the food may be forced through the pylorus. The operating room must be very warm and the child must be kept warm during operating.

The post-operative care is comparatively simple from the surgical viewpoint. It is very desirable to give sterile water by mouth with a medicine dropper within a very few hours after the operation. By evening time, a diluted milk, preferably human milk, can be given in quantities of one ounce at one-hour or two-hour intervals. Water may be given between these feedings.

If there is an unusual amount of bleeding, a cubic centimeter of hemostatic serum repeated two or three times has satisfactorily controlled the bleeding. The morning after the operation a good dose of castor oil should be given.

The author feels very positive that the indications for radical surgical interference have broadened and increased at the expense of that group we have formerly treated medically. He believes the borderline case about which we might argue as to whether to continue medical or resort to surgical treatment should now always be surgically treated.

R. N. ANDREWS.

ACUTE ATROPHY OF THE LIVER IN CHILDHOOD—Lyon and Deutsch (*Zeitschr. f. Kinderh.*, XXXII, 292-298): This condition, while still rare, is more frequent and more widely distributed than formerly. The hyperacute form with a duration of less than a week is an extreme rarity in childhood. Much more frequent are milder forms, which either end in complete functional recovery, in cirrhosis, or in death after an interval of 3 or 4 weeks.

The cardinal symptoms are jaundice, clouding of consciousness, decrease in size of the liver, hemorrhage and the appearance of leucin and tyrosin in the urine. In the more chronic cases, ascites occurs, but there is no hemorrhage and leucin and tyrosin are seldom found in the urine.

The cause as a rule lies in repeated injuries to the liver. Infections, poisons, syphilis and salvarsan all play a rôle. Syphilis frequently lies in the background as a contributing cause. Pathologically, the central cells of the lobule are more severely injured than the peripheral ones. This leads to the conclusion that the noxious agent is not carried to the liver from the alimentary canal by the portal route.

The authors apparently favor the hypothesis that the more frequent cause is an ascending infection of the bile passages.

ROOD TAYLOR.

PROGNOSIS AND TREATMENT OF TUBERCULOSIS IN INFANCY AND CHILDHOOD—Rowland G. Freeman (*Arch. of Ped.*, August, 1922): Tuberculosis in infancy is characterized by an early involvement of the bronchial lymph nodes, and it is usually of alimentary origin. In private practice tuberculosis is more apt to be bovine in type than human, because the danger of tuberculosis in man is recognized and such contact is generally avoided. That this disease may develop in fetal life is well established. The younger the child the less resistance it has to this disease. The prognosis in the first year is absolutely bad. Children with chronic lung lesions, who die in the first year in an emaciated condition, are more likely to have an unresolved pneumonia than a tuberculosis. This disease, whether rapidly progressive or slow in progress, usually causes comparatively little emaciation.

Tuberculosis in infancy which is recognized may often be cured by prompt interference and thorough treatment. If, however, it has involved the lungs, it rapidly becomes a generalized condition and gives a bad prognosis. Enlarged bronchial lymph nodes may be shown with the x-ray plate if the picture is taken in a lateral oblique angle. Tuberculosis of the lungs in a child over one or two years of age may in many cases be cured if prompt action is taken; fresh air persistently used, heliotherapy cautiously, rest, and cod-liver oil, with full nourishing diet, are needed. These children, if destined to do well, rapidly lose their temperature, soon gain weight, and the physical signs show improvement.

R. N. ANDREWS.

GYNECOLOGY AND OBSTETRICS

SUPERVISORS:

ARCHIBALD L. McDONALD,

FIDELITY BLDG., DULUTH

ALBERT G. SCHULZE,

LOWRY BLDG., ST. PAUL

THE INDICATIONS FOR HYSTERECTOMY FROM THE RESULTS OF CURETTAGE IN POST ABORTUM INFECTIONS: J. Vanverts of Lille (*Gynecologie et Obstetrique, Revue Mensuelle*, April, 1922). The author comments on the place of hysterectomy in the treatment of these conditions, and discusses the teaching of Faure, as follows:

Curettage, that is emptying the uterus, is indicated in all cases where one has reason to suspect retention of placenta debris. Unless there is marked improvement in 24 hours, if fever presents or is increasing, if the pulse re-

mains rapid, or if there are fever or chills, one should do a vaginal hysterectomy. This is at considerable variance with common practice in America, but the study is of interest in connection with the prognosis as determined by the results of curettage. The paper is based on 99 cases of infection after abortion, which were treated by emptying the uterus with the fingers or instruments. The author limits this proceeding to recent cases with not more than 7 days of fever, and with no evidence of periuterine extension.

He divides his cases into three groups, based on post-operative findings:

1st. The temperature disappears or falls definitely within 24 hours. There were 80 cases in this group with 77 cures, 2 deaths and 1 left the hospital before cure had taken place. Three developed peritonitis, which was treated successfully by vaginal drainage.

2nd. Temperature persisted or increased in 17 cases, with 5 deaths and 12 cures.

3rd. In two cases death occurred promptly following curettage.

In the discussion the author states that persistence of fever for more than 4 days suggests periuterine inflammation. In this connection it is interesting to note the use of subcutaneous injections of turpentine to induce fixation of abscess for treatment. The author concludes that the mortality in cases where temperature falls promptly following curettage is 2.5 per cent; in cases where this persists, mortality is 29.4 per cent; that the failure of temperature to fall is of serious prognostic importance. Curettage is a most successful measure of treating post-abortion infection, provided it is limited to recent cases and to those in which the infection has not already extended beyond the uterus. It is reasonably possible to establish the prognosis based upon temperature reaction following curettage.

Treatment for persistent cases may be drainage of localized abscesses, or, in certain selected cases which remain unlocalized with general peritonitis or general septicaemia, the author advocates vaginal hysterectomy.

ARCHIBALD L. McDONALD.

INTESTINAL ADENOMAS OF ENDOMETRIAL TYPE—John A. Sampson (*Arch. of Surg.*, September, 1922): This study is a continuation of work published in the *Archives of Surgery*, September, 1921, and previously reviewed in this column. The author has previously described a characteristic type of hemorrhagic ovarian cysts, lined with epithelium resembling endometrium. These have a tendency to perforate and become adherent, resulting in implantation of adenomata of endometrial type which are found in various parts of the pelvis and lower abdomen. The microscopical picture resembles that of the adenomyoma described by Cullen.

This article discusses:

1st. Certain of the intestinal implantations of the endometrial adenomata.

2nd. Presents a most interesting theory regarding the

etiology of the hemorrhagic chocolate cysts of the ovary and of these implantations.

Sampson's experience and exhaustive study indicates that these conditions are not infrequent. One would expect to find an adherent ovary with the hemorrhagic cystic cavity of varying size. Implanted adenomas of the endometrial type are analogous to those of cancer. The author believes that ovarian hematomas of this type are probably the principal source of these implantations, which are found most often on the sigmoid, rectum, appendix and small intestine.

The character of the intestinal lesion varies greatly, but always presents two potential interests:

a. Growth and invasion.

b. Function, that is menstrual activity associated with congestion and bleeding.

In some instances the growth may invade or deform the intestine in such a manner as to obstruct the lumen, or cause mechanical symptoms.

Clinically, the condition is found usually in women from 30 years of age to the menopause. Painful menstruation of the acquired type is a common occurrence. Implantation of adenomas are often found accidentally, the intestinal symptoms, if present, are likely to be more marked during menstruation.

The etiology of ovarian hematomas of the endometrial type is given an interesting explanation. The author has found that the microscopic structure differs from the common corpus luteum cyst, and he does not accept the idea of secondary epithelialization of the follicular hematomas. There are two possible origins of endometrial epithelium, which is found in the ovary:

(a) Misplaced Müllerian duct epithelium as advanced by Russell. If the origin were due to developmental anomaly, one would expect to find evidence of implanted adenomata of this type in early life. Sampson's cases, however, occurred mostly during menstrual life. (b) The author assumes that fragments of tubal or uterine epithelium may escape from the fimbriated end of the tube during menstruation and be deposited on the surface of the ovary. In 49 of his cases the corresponding tube was patent in all. He believes that this uterine tissue becomes implanted on and is embedded in the ovarian stroma, forming a hemorrhagic cyst of endometrial type. This becomes distended with menstrual blood and eventually perforates, allowing the escape of endometrium, which may later become implanted in other regions as above noted. The ovary acts as a hotbed, since it is most favorable to the growth and development of these fragments. Periodic ovarian activity stimulates the further growth of the original and secondary implantations. The menopause, either natural or post-operative, removes this stimulus so that subsequent activity of the secondary growths decreases or ceases.

Therefore, Sampson advises removal of both ovaries at least, as a means of surgical treatment. Unless the secondary growths are causing mechanical difficulties it is reasonable to assume that these will disappear, or at least cease to extend following the menopause.

ARCHIBALD L. McDONALD.

ROENTGENOLOGY

SUPERVISORS:

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R. G. ALLISON,
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THE EFFECT OF RADIUM ON THE NORMAL TISSUES OF THE BRAIN AND SPINAL CORD OF DOGS, AND ITS THERAPEUTIC APPLICATION—Eugene P. Pendergrass, J. M. Hayman, Jr., K. M. Houser and V. C. Rambo (Philadelphia), (*The Amer. Jour. of Roentgenology*, Vol. 9, No. 9, September, 1922, p. 553): Danysz was the first to study the effects of radium upon tissues of the central nervous system. In young mice he produced (in the order of their occurrence) paralysis, ataxia, convulsions and finally death, by placing radium salts over the spine. Older mice, required several times the amount of exposure to produce the same effects. Young guinea pigs, when treated in like manner, manifested the same symptoms, but old pigs were apparently immune. He observed marked microscopical changes in the walls of the capillaries, the wall becoming necrosed and broken so that there were localized areas of hemorrhage throughout the brain substance. Other observers confirmed these findings and, in addition, found a marked injection of the meninges together with hemorrhages into the dura. None of the early observers recorded any changes in the nerve cells. Horsley and Finzi placed radium over the motor areas of the cortex in monkeys, using filtered rays. No symptoms were observed. At necropsy there was found a thickened dura; infiltration of the pia with leucocytes and a marked endothelial proliferation in the blood-vessel walls.

Williamson, Brown and Butler, using unfiltered rays directly on the brain surface of dogs, produced an area of necrosis surrounded by a broad zone of hyperemia. In the necrotic area all cells were destroyed, the blood-vessel walls being markedly thickened and hyalinized, but otherwise intact.

Halkin, using light doses, observed no effects on blood-vessels until the third day, when there was a marked cloudy swelling of the endothelial cells. Finally the capillary wall disappeared, there remaining but a blood space with a broad hemorrhagic zone surrounding it.

Dogs were used throughout the authors' experiments. In the first series they were treated with both filtered and unfiltered rays, with the radium tube placed directly on the dura through a trephine opening one centimeter in diameter. In this series all dogs receiving a dose of 1,150 milligram hours or less manifested no symptoms before necropsy, while all of those (with but one exception) that received 1,400 milligram hours or more, died. At necropsy, the findings varied according to the dose used and the time interval since the radium application. In all cases there was an immediate marked injection of the capillaries in the region of the radium. In those dogs receiving a relatively large dose (from 2,300 to 2,600 milligram hours) and living only a few days, there were found sharply circumscribed areas of necrosis studded by punctate areas of

hemorrhage. These areas measured about 10x20 centimeters on the brain surface and extended to a depth of about ten centimeters. In dogs receiving relatively light dosage, scarring of the tissues resulted after an interval of several months. In dogs that received a moderately heavy dose (900-1,150 milligram hours) there were noted, at first, circumscribed areas of necrosis; after an interval of several months large cavities had formed in the necrotic areas.

The next series of experiments undertaken by the authors was the implantation of radium into the brain and cord. The results obtained were very striking, three out of the five dogs dying of a general toxemia and at necropsy there was found a general peritonitis, in addition to the brain changes. In one of the cases there was also found pleuritis, pericarditis, abscesses in the liver and meningitis, besides the pathology mentioned above. The authors do not attempt to explain these results, except by the fact that radium reduces the dog's resistance to infection.

In their experiments on surface application of radium to the spinal cord, the authors succeeded in producing marked clinical symptoms, using six hundred milligram hours. Tract degeneration was noticed above and below the level of the application.

At the conclusion of these experiments a very interesting observation was made: The cerebral hemisphere treated by radium was increased both in size and in weight. The weight of a series of treated hemispheres was compared with their fellows of the opposite side and found to be on an average one per cent heavier. They were unable to prove that the increased weight was due to edema.

The authors then review a series of papers dealing with the theories and opinions of various authorities as to the cause of the toxemia following radium and x-ray exposure.

In their conclusions the authors stress the following points:

1. That surface application on the brain cortex of 1,150 milligram hours of radium is compatible with life.
2. That the cord and deeper centers of the brain do not stand this amount of exposure (600 milligram hours having caused marked symptoms).
3. Changes occur in brain tissue which give rise to no clinical symptoms.
4. After exposure to one thousand milligram hours, the brain shows a general swelling throughout the radiated hemispheres.
5. Radium implantation and surface application can produce severe general symptoms, such as toxemia, peritonitis, etc., indicating that a powerful toxin is produced from the radiated tissue.
6. *This effect of radium is due to:*
 - (a) The effect on the nucleus and cytoplasm of the cell.
 - (b) Autolysis of cell.
7. Radium can be used in brain tumor cases, but it should be used cautiously, by one who thoroughly understands the results that come from its improper use.

A. W. DESJARDINS.

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Ames, Florence Dorothea....	Rush, M. D., 1922.....	Moorhead, Minn.
Camp, John Dexter.....	Boston U., M. D., 1922.....	Rochester, Minn.
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Lieberthal, Paul Ralph.....	N. W., 4 yr. Cert. Med., 1922.....	General Hospital, Minneapolis
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Barewald, Chas. Lepold.....	U. of Ia., M. D., 1891.....	Davenport, Iowa
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Ebert, Jos. Wm.....	Creighton, M. D., 1921.....	Rochester, Minn.
Ewbank, John Nelson.....	Hah. Chicago, M. D., 1910.....	366 Prior Ave., St. Paul
Fesler, Harold Herbert.....	Hah. Ill., M. D., 1920.....	621 Lowry Bldg., St. Paul
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Hill, Frederick Edgar.....	U. of Pa., M. D., 1911.....	323 W. Superior, Duluth
Jenkins, Jas. Thos., Jr.....	St. Louis U., M. D., 1922.....	Swedish Hospital, Minneapolis
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Malloy, Jos. Francis.....	Creighton, M. D., 1921.....	Rochester, Minn.
Maytum, Chas. Koran.....	U. of Ia., M. D., 1919.....	Rochester, Minn.
Nagel, Gunther Wilibald....	Leland Stanford U., M. D., 1921.....	Rochester, Minn.
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NATIONAL BOARD CREDENTIALS

Inlow, Wm. DePrez.....	Rush, M. D., 1917.....	Rochester, Minn.
Jennings, Mary Hill.....	Woman's Med. Coll., Pa., M. D., 1921..	Greens Farms, Conn.

BOOK REVIEWS

PROPAGANDA FOR REFORM IN PROPRIETARY MEDICINES. Vol. 2. 603 pages. Press of American Medical Association. Chicago, 1922. Cloth. \$2.00.

PHYSICAL EXERCISES FOR INVALIDS AND CONVALESCENTS. Edward H. Ochsner, B.S., M.D., F.A.C.S., Pres. Illinois State Charities Commission; Attending Surgeon, Augustana Hospital, Chicago. 56 pages. Illustrated. 2nd edition. St. Louis: C. V. Mosby Company, 1922. Cloth. \$0.75.

THE PRACTICE OF PREVENTIVE MEDICINE. J. G. Fitzgerald, M.D., F.R.S.C., Professor of Hygiene and Preventive Medicine and Director Connaught Antitoxin Laboratories, University of Toronto; chapters by other physicians. 826 pages. Illustrated. St. Louis: C. V. Mosby Company, 1922. Cloth. \$7.50.

OPIATE ADDICTION; ITS HANDLING AND TREATMENT. Edward Huntington Williams, M.D., formerly Assoc. Prof. of Pathology, University of Iowa; Asst. Physician, New York State Hospital System; Special Lecturer on Criminology and Mental Hygiene, State University of California. 186 pages. New York: MacMillan Company, 1922.

THE PROPAGANDA FOR REFORM IN PROPRIETARY MEDICINES. Vol. 2, 1922. Containing Reports of the Council on Pharmacy and Chemistry and contributions from the A. M. A. Chemical Laboratory and from *The Journal of the American Medical Association*. Cloth. Price, \$2.00. Pp. 603 with illustrations. Chicago: American Medical Association, 1922.

The present book is the second volume of the "Propaganda for Reform in Proprietary Medicines." The first volume ran through nine editions. The ninth edition contained (1) the most important reports of the Council on Pharmacy and Chemistry, (2) the reports of the A. M. A. Chemical Laboratory, and (3) those articles from *The Journal of the American Medical Association* which deal with the problems of proprietaryship in medicine and the furtherance of rational drug therapy. All of this material covered a period prior to 1917.

The present (second) volume contains similar material covering the period from January, 1917, to April, 1922, inclusive. Like Volume 1, this volume is divided into four parts:

Reports of the Council on Pharmacy and Chemistry:—This section presents the principles and rules which govern the Council in the examination of medicaments, contains articles and reports bearing on the work of the Council as well as the most important reports of the Council from 1917 to April, 1922, inclusive.

Reports of the A. M. A. Chemical Laboratory:—This, besides presenting the aims and objects of the Association's Chemical Laboratory, also outlines some of the Laboratory's work which is of special interest to physicians.

Contributions from The Journal: Proprietary Products:—This contains articles which have appeared in *The Journal A. M. A.* on proprietary preparations and their methods of exploitation.

Contributions from The Journal: Miscellany:—In this section are articles dealing with matters of interest to the medical profession but not coming strictly under the classification of proprietary medicinal preparations.

A comparison of the material that has appeared in Volume 1 of the Propaganda for Reform with that which appears in this volume will reveal the changing conditions in the proprietary medicine field. Many of the reports in the first volume brought out the fact that medicinal preparations were at that time foisted on the profession with false claims of composition; reports of this character are less conspicuous in the present volume. Many of the reports in Volume 2 deal with unwarranted therapeutic claims, especially those advanced for animal organ preparations, serums, vaccines, preparations for intravenous medication, etc. The present volume will also be found of interest in its portrayal of the changed conditions in proprietary medicines brought about by the World War.

The index in this new volume is, in effect, a bibliography, including references not only to articles in the book but also (a) to articles which appeared in Volume 1; (b) to articles on the same general subject in *The Journal of the American Medical Association*, and (c) to articles appearing in the annual reports of the Council on Pharmacy and Chemistry and of the A. M. A. Chemical Laboratory, but not printed in either volume of the Propaganda for Reform in Proprietary Medicines.

This book is not only valuable for the information it contains, but it is also interesting. It shows up the technique of the artist in the sale of proprietary medicines, tells of his skillful word-pictures that are sent to the physician as "literature." It makes clear the work of the Council on Pharmacy and Chemistry, the A. M. A. Chemical Laboratory and *The Journal of the American Medical Association* in their several capacities as servants to the medical profession and as champions of rational medicine. The book should be in every physician's library, and more than that, should be within reach for convenient reference.

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OPIATE ADDICTION; ITS HANDLING AND TREATMENT. Edward Huntington Williams, M.D., formerly Assoc. Prof. of Pathology, University of Iowa; Ass't Physician New York State Hospital System; Special Lecturer on Criminology and Mental Hygiene, State University of California. 186 pages. New York: Macmillan Company, 1922.

Dr. Williams, in his book, does not offer anything new in the handling and treatment of opiate addiction. He explains in a free and chatty manner the gradual reduction and the rapid withdrawal treatment, citing and illustrating cases that are suitable for each method. In his gradual reduction method he uses the old idea of gradual substitution of strychnin and codein for morphin, while in the rapid withdrawal he advocates the use of hyoscin. He devotes a chapter each to useful hypnotics and hyoscin delirium and closes the chapter with observations and comments which are interesting. The book is well written, easy to read, printed in large type, and consists of 186 pages. For those seeking general information on this subject it can be recommended.

GEORGE N. RUHBURG.

Information regarding new locations, or physicians looking for locations, should be addressed to the office of the Secretary, 403 Central Bank Building St. Paul. Expert revision of technical papers by university journalism instructor. Best references. Write for rates. Writcraft Service, 707 University Ave. S. E., Minneapolis, Minn.

Physician wanted in good North Dakota town. Large territory. Good drug store. Good farming country with large crop. A snap for good man. State qualifications in first letter. Address B 46 Minnesota Medicine.

Hanley Falls, Minnesota, offers an excellent opening for a doctor. Communicate with President of Commercial Club.

Information regarding a location at Ruthton, Minn., may be obtained from Mr. Elmer Johnson, Recorder of this village.

FOR SALE—Owing to the death of my husband, I wish to sell general practice at once. Town of 5,500. St. Olaf and Carleton colleges. Good roads. Office equipment reasonable. Write or phone. Mrs. J. G. Phillips, Northfield, Minn.

FOR SALE—Southeastern Minnesota—general practice established thirty years; complete office equipment. Population 1,400; modern, progressive. American; exceptional opening; terms very reasonable. Address B 47 Minnesota Medicine.

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ORIGINAL ARTICLES

SOME RECENT ADVANCES IN THE PHYSIOLOGY OF THE ALIMENTARY TRACT*

A. J. CARLSON, Ph.D., M.D.

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Chicago

Mr. Chairman and Members of the Minnesota State Medical Association: Those of you who graduated from the medical school twenty-five or more years ago may wonder what business a physiologist has at the annual meeting of your State Medical Association, because at that time there was very little physiology in the majority of our medical schools or anywhere else in this country. Doubtless you performed some experiments on the frog's heart and the frog's gastronemius, and you made test tube experiments with pepsin and hydrochloric acid. You may have tested the urine for sugar and albumin, and you attended a few lectures in physiology, which you promptly forgot in the stress of medical practice. Physiology in the medical school today is different; but for me to say that physiology is, or is going to be, of major importance in your art may merely be an expression of my egotism, for it is a fact that there is not today a physiologist on the staff of any important hospital in the United States. There are pathologists, bacteriologists and bio-chemists, but no physiologists. Are we such able instructors that we have made every medical graduate a physiologist? Has physiology nothing to contribute to the art of medicine? Or is the present unsatisfactory relation due to mutual myopia?

Last night one of our major prophets in medicine (Dr. Mayo) said that up until now medicine had been largely guided by the deadhouse; that is, by the end results of pathologic processes, and that the next big medical advance must be guided largely by physiology. He also expressed the hope that the physiologist might graduate from the frog, the

turtle, and the dog to *man*. That gradation has taken place during the last generation; now we use the frog, the turtle, the dog, and man,—in fact every animal form that can contribute to our knowledge of life, and life includes disease. But how can physiology render its greatest service to medicine under the present policy of mutual exclusion if not silent contempt? If the physiologist is branded as "academic," as a mere impractical theorizer, and the medical practitioner put in the category of an ordinary business man, it is because the physiologist and the physician do not realize that their ideals and aims are identical.

I propose to speak briefly on some of our experimental work on the gut carried out by our Chicago group—work that seems significant in relation to some of the practical problems that you are facing in your every-day practice.

As your illustrious dean (Dr. Lyon) intimated, we have been fortunate in having a second Alexis St. Martin. We now have a third. Dr. Lyon spoke of a second Beaumont but I do not think we have produced a second Beaumont. Beaumont is an inspiration—and a challenge to every doctor in "Gopher Prairie" and other prairie towns of the country. When I look over this audience and bigger medical audiences, and think of the thousands of medical men that are turned out from our medical colleges every year, I do not feel particularly proud that we have not raised scores and scores of Beaumonts. There are many Alexis St. Martins; there is no end of exceptional opportunities. Those of us who are interested in the progress of science and the welfare of society from the aspect of health feel keenly the present waste of research material, even in our best hospitals.

In our laboratory we have for some time been interested in the problems of motor control of the gut, in secretion of the digestive juices, in intestinal toxemia, and in visceral pain. I shall try to discuss briefly some of our findings on these several points.

One of the surprising things that we worked out on man, not only on Alexis St. Martin, but on all

*Banquet address at the Annual Meeting of the Minnesota State Medical Association, Minneapolis, October, 1922.

types of normal men of all ages, was the fact that, contrary to what seemed reasonable, the empty stomach exhibits on the whole greater tonus and motor activity than a filled stomach. This experimental work has not only been extended to other mammals, but also to birds, reptiles, frogs, fish, and down to the snail. So despite the recent protests in this city by a distinguished politician against the unity and continuity of living things, there is unity of motor phenomena in the gut all through, and I have no doubt that the balloon test would put Mr. Bryan's stomach in line with the rest of us, even if his mental tests should indicate absence of evolution. There is practically continuous motility and continuous secretion in the empty stomach of the normal person.

What is utility of this activity? I presume nature sometimes looks to us unreasonable because we do not know all the facts in the case. Some of these motor phenomena of the empty stomach have a wider biological significance than digestion. The contractions of the nearly empty stomach give rise to the major part of the sensations of hunger, while in gastric and duodenal ulcers these same contractions give rise to the major portion of the ulcer pains. Now, this may sound like rank heresy to many of you who have been brought up on the simple theory of the chemical pain of gastric and duodenal ulcer. This theory is simple and easily understood, but does it square with the facts? Acid irritation of a sore on the skin gives rise to pain. Acid gastric juice in the sore on the gastric or duodenal mucosa should likewise cause pain, and since we can temporarily abolish the ulcer pains by putting alkalies into the stomach, that seems proof positive, and many doctors have considered this a closed chapter. Now, gentlemen, very few chapters in physiology or medicine are closed. When we come to examine the foundation for many generalizations, we find things that were considered established facts are really not so. It is a fact that the ulcer pains may be present without gastric acidity. It is a fact that you can temporarily stop the ulcer pain by putting acid in the stomach. I am not saying that the normal contraction of the empty stomach in the region of the ulcer, where the nerves are probably hyperexcitable, is the whole story, because in very intense ulcer exacerbations the pain is not periodic, or, if periodic at all, the periodic pains are superimposed

on a continuous pain. Whether this continuous pain has a chemical factor we do not know, but one element undoubtedly is a spasm of the pylorus, in which the acid gastric juice may play a rôle.

I have nothing new to communicate on the genesis of pyloric spasm, but we have found that anything and everything we put into the stomach (warm or cold water, acids, alkalies, food, mechanical stimulation) temporarily inhibits the stomach tonus and contractions. One factor, therefore, in the control of the ulcer pain by alkalies, water or food, is the inhibition of the stomach contractions by the material we introduce.

We have some new facts on the motor control of the esophagus and the cardia. It is a curious fact that the lower third of the esophagus (the smooth muscle part) and the cardia have four sources of external innervation; that is, motor and inhibitory nerve fibres from the two vagi and the two splanchnic nerves. This is true for the dog, the cat and the rabbit. As in the case of the heart, the inhibitory fibres to the cardia seem to be in tonic action, for on sectioning the vagi the cardia may pass into prolonged spasm.

Many of us had accepted the generalizations that the vagus system and the sympathetic system have opposite actions on the gut; that the vagi carry motor fibers from the esophagus down to the ileocecal valve, and that the splanchnics carry inhibitory fibers for the stomach, the small intestine, etc. This generalization seems to have no real foundation. If this is so, the clinical classification of neurotic patients into "vagotonics" and "sympatheticonics" must also be revised.

We have shown that the stimulation of the sensory nerves distributed to the mouth and the pharynx usually causes reflex inhibition of the esophagus and the cardia. Conversely, appropriate stimulation of nearly every sensory nerve in the viscera or the visceral organs, that is, the gall bladder, stomach, small intestine, large intestine, urinary bladder, or the sciatic nerve usually causes a reflex spasm of the cardia and lower esophagus, just as we found to be the case of the lungs in lower animals. These facts may aid in the analysis of the types of spasms of the esophagus and cardia in man that are not due to local injuries.

On the secretory side we have some new facts. We did a great deal of work on Mr. V., the second

Alexis St. Martin, and on dogs, with the so-called stomachics or bitter tonics. We wanted to see if these ancient and honorable remedies increased hunger, appetite, gastric secretion, or food consumption, and digestion. This work was done on the dog in health, on the cachectic dog, normal men, and on cachectic patients. The results were essentially negative. The bitter tonics did not consistently increase hunger and appetite, gastric secretion or food consumption.

These are the facts. I am not saying that you should quit prescribing bitters in these dry times, but you should at least try in a scientific way to find out whether you actually accomplish anything by their use. It is true the bitter tonics may be as harmless as the "laying on of hands," but are we doing our duty as doctors (i. e., teachers) in passing on the tradition?

In view of the clinical literature on hyperacidity and hyperacid symptoms, we were surprised to find that normal gastric juice has an acidity equal to the highest acidity ever recorded by competent clinicians in so-called hyperacid patients. Moreover, gastric juice of this normal high acidity (about 0.4-0.5 per cent (HCl) produces no disease symptoms, at least if the gastric motor and sensory mechanisms remain normal. The old view that normal gastric juice has an acidity of only 0.2 per cent HCl is an error, and it seems to be a fact that under no condition of disease is the stomach capable of secreting a juice of a greater than normal acidity. We have all degrees of hypoacidity down to complete anacidity, but the conception of gastric hyperacidity is certainly an error of fact, and probably an error of interpretation. This does not mean that the patient who comes to you with so-called hyperacid symptoms does not actually experience the pains and distress. Samples of his gastric content will usually show some retention, but the acidity will be normal or subnormal. But you say since evacuation of the stomach or administration of alkalies may temporarily allay the symptoms, does that prove their acid genesis? I think not. There is no evidence that gastric juice can induce symptoms of disease, except when acting on motor and sensory mechanisms that are abnormal. Gastric hypersecretion does exist. We can produce some types of it experimentally, and curiously enough we have found in the dog that this gastric hypersecretion (i. e., an excess quantity of normal gastric juice) is produced by alkalies,

the ordinary alkalies that you use on your patients. There is gastric hypersecretion after fasting, and in some cases after producing experimental ulcers in the stomach or duodenum. But hypersecretion induces no disease symptoms if the motor and sensory gastric mechanisms remain normal.

When I took up this work on the secretion side I was very much impressed by the beautiful researches of Pavlov. Pavlov made the second great contribution to gastric physiology, following Beaumont. He has also made some mistakes, but I hope all of you have studied his classic monograph. I do not see how you can be good physicians without knowing (and practicing) a good deal of physiology any more than we can be good physiologists without knowing a good deal of disease. Pavlov lays great stress on the appetite gastric juice. In order not to produce indigestion in my second Alexis St. Martin, I carefully put back nearly all the appetite gastric juice collected on the mastication of a meal. One day I removed all the appetite juice without replacing any of it. Mr. V. ate his meal and was not the worse for it. The total absence of the appetite juice had no effect. This was repeated over a long period, taking out of the stomach every cubic centimeter of appetite secretion before Mr. V. put the food in his stomach; he developed no disturbance of gastric digestion and the evacuation of the stomach remained normal. This means two things: First, that under normal conditions we secrete very much more gastric juice than we need. In the second place, I think it means that where we find so-called dyspepsia or gastric indigestion, it is probable that the disturbance of secretion in the way of hyposecretion, and achylia, is not an important etiologic factor. The disturbance is primarily motor, not secretory. The fact that chronic achylia is compatible with health seems to indicate that the hydrochloric acid of the gastric juice is not necessary for normal gastric motility. If this position is correct, what about our pepsin-HCl therapy in gastric disorders?

Time does not permit me to extensively refer to the recent beautiful work of two members on our staff (Luckhardt and Dragstedt) on various types of intestinal toxemias (intestinal obstruction, acute dilation of the stomach, parathyroid or gastro-intestinal tetany). It now appears settled by experiments on dogs that tetany parathyropriva is due to toxins from the gut developed by the action of the colon group of bacteria on the proteins of the food.

This seems to me a very important fact in relation to idiopathic epilepsy and other hypermotile states in man. And contrary to the generally accepted view the parathyroid glands do not appear to be necessary to life, if proper therapy is carried out during the first five to six weeks following removal of the glands. These parathyroidectomized dogs live in apparently good shape for years but with an unstable nervous system or lessened resistance to toxins similar to the patient afflicted with idiopathic epilepsy. I believe the whole field of clinical tetany must be reanalyzed from the point of view of these new facts, both as to etiology and therapy.

Our Chicago group has also been interested in the genesis and chronicity of gastric and duodenal ulcers. The major difficulty for the physiologist is the production of chronic ulcers in animals; nature provides the ulcers for you, clinicians, but your major difficulty is your inability to determine, even by laparotomy, when an ulcer is actually healed, since the absence of recognizable ulcer symptoms does not mean a healed ulcer. We have not gone far in this field, but far enough to seriously question the efficacy of prevailing therapies (fasting, bland diets, alkalies, gastro-enterostomy) to cure chronic ulcers; cure, in the sense of removing the factors that make for chronicity. These measures, plus hygienic living, will, in the majority of cases, control at least some of the ulcer symptoms, but only the ignorant patient and the superficial doctor are satisfied with that.

We have some new facts bearing on the chemical control of gastric and pancreatic secretion. It has been generally accepted on the basis of the work of Bayliss, Starling, and Edkins in England, that the acid gastric juice acting on the duodenal mucosa produces a hormone (secretin), which, absorbed into the blood, acts as a specific stimulant for the pancreas. Analogous experiments on the stomach led to the view that some of the substance in the protein food, and possibly the HCl of the gastric juice, acting on the gastric mucosa give rise to a hormone (gastrin), which acts as a specific stimulant of the gastric glands. Now, a group of workers in our laboratory (Luckhardt, Koch, Keeton, Ivy) have shown that the secretin of Bayliss and Starling and the gastrin of Edkins are artefacts and have nothing to do with the normal secretion of the pancreas and the stomach. Secretin and gastrin are drugs, not hormones, so the problem of

how the food in the gut initiates gastric and pancreatic secretion is back to the status of twenty years ago, when Pavlov and his pupils took the position that we are dealing with local nervous reflexes. This chapter in physiology, like many other chapters, reminds us of the fact that the physiologist is only human. He makes mistakes by faulty experimental methods and faulty interpretations, just as you do in your diagnosis and your therapy of disease.

These are, in brief, some of the problems our Chicago group have been interested in the last few years. We have added a few new facts, and scrapped a few errors. There is still a long and increasingly difficult trail ahead, and we are on the way, even though the university policy of "work and starve" and the allurements of a fairer financial return in practice thin our ranks and threaten to deprive our science of its share of first-class men.

Those who work and think feel at times that there is at present a fundamental incompatibility between the science and the art of medicine. Successful practice today seems to demand of the doctor a degree of positiveness or dogmatism fatal to scientific work. It is an every-day observation that even the most absurd medical fad and fakery can, at least for a time, be "put over" on the laity with persuasive dogmatism. To compete on that basis means an end to medical progress and a return to the jungles of superstition. I refuse to believe that critical candor, a *sine qua non* in the science, spells failure in the art of medicine. On the contrary, I believe that the only remedy for the present confusion of laymen on medical matters is not less intelligent honesty, but more candor on our part.

MEDICAL MEN AND INSTITUTIONS OF PETROGRAD IN 1917 AND 1922*

MICHEL ZLATOVSKI, M.D.
Duluth

Petrograd in 1917 was a beautiful and rich metropolis of 2,000,000 people, with institutions for commerce, education and culture, and a varied social life. In medicine, it was one of the most

*Presented before the St. Louis County Medical Society, Duluth, December, 1922.

richly endowed of Europe. Here was the distinguished military medical academy, which graduated many renowned professors—Mechnikow, Botkin, Pavlow and others. It had a medical college exclusively for women, an institute for physicians who went there to further their medical knowledge, an institute for experimental medicine with Professor Pavlow at the head of it, and a generous curriculum.

Safeguarding the health of Petrograd's inhabitants, were 27 hospitals, more than 100 dispensaries and private clinics, among them the renowned gynecological institute of Professor Otto. The city could number 5,000 doctors and professors of medicine, and one hundred establishments that dispensed drugs exclusively.

Five years have passed under the rule of the Bolsheviks, and what are we today? Numerically, the medical academy and the University for women have at present more students than at any time in their history, but the application of the students to their studies is not near as thorough as before. In fact, there is no comparison. The Bolsheviks have declared that the medical colleges are open to all, that no previous training, no diploma is necessary, and that, besides being free of any cost, each of the students would be assured a livelihood—that each would be provided with rations and spending money. The result was that the medical colleges were flooded with both men and women a great many of whom did not have any previous training at all, and so sweeping and assuring was the declaration of the Bolsheviks, that some of the men and women who began studying could not even sign their own names.

This mob filled the grounds and buildings with shouts, laughter and hilarity. They were practically all communists, and of the proletariat, as they termed themselves, and suspected the instructors of being counter-revolutionists and opposed to Bolshevik rule. The students selected committees among themselves to watch the movements of their teachers. The result was that true academic spirit was made impossible.

Besides, it was soon plain that the Bolsheviks could not keep the rosy promises of not only food, but spending money besides, and the result was that the students sought other means to gain a livelihood, such as speculations and physical labor. Lectures, which did not hold any interest

for most of them, were not attended. A part of the professors had fled from Russia, a part of them died from starvation and the prevalent diseases of the time, and the remainder, starved and weakened, were compelled to seek other means of employment besides the classroom, and often it was hard labor. Professor Pavlow once told his classes that he could not continue his world-famed experiments with animals because chopping wood and other hard labor had robbed his hands of their skill. Professor Kravakow, renowned pharmacologist, worked on a commonly tilled land plot, several miles from his home, carrying his crop of potatoes home on his back.

The academy and the university were not heated, the water pipes burst, there was no gas, and electricity was only allowed a few hours each day because there was insufficient fuel for the generators. The laboratories were empty, for their contents had been sold by students to speculators, the expression commonly used after the revolution, when referring to business men. Of course, learning was made impossible.

The experimental institute had no intellectual strength. The animals used for experiments died for lack of food. The head of the experimental institute, Professor Pavlow, who received an offer from the Rockefeller Institute to come here, and received offers from England and other countries, was not permitted to leave Russia by the "tcheka," or the extraordinary committee, which administered the affairs of Russia. Even the appeal of Maxim Gorky to the administration on behalf of Professor Pavlow, who said he could not continue his work in Russia, failed to change the resolve of the "tcheka" not to permit him to leave. It was my good fortune to have been often in the Professor's company, and knew of his hopelessness as to improvement in the situation.

From 1917 to 1920, the institute for the furthering of the education of physicians was closed. The doctors were too much concerned with getting bread and too impoverished to continue their studies. Last winter, the Bolshevik regime drafted 1,000 doctors, most of them students who had attended the University during the three years of open-wide education, to give them more training than they had received. They were allowed during this time the following rations: one pound of bread a day; for the entire month, two pounds of

sugar, four pounds of herring, and two pounds of salt, regardless of whether they had a family or not. And as these rations were distributed irregularly, they could not devote their time and energy to their studies exclusively. So, to get more food, the stronger of them worked as stevedores on the wharves and at other hard labor, while the weaker ones sold newspapers, stockings and other articles on the streets of Petrograd. With the class rooms two or three degrees centigrade, and practically empty, the professors had no inclination to lecture. Then, the student doctors were sent to the devastated parts of Russia to give medical aid to the inhabitants, whose ills were lack of food. Characteristically, the Bolshevik regime gave each of these doctors 1,000,000 rubles for traveling expense, when it took 2,500,000 to pay for the dray to the station.

Of all the hospitals in Petrograd, there remained only six when I left last May, and they were in terrible circumstances. The temperature of the rooms was seldom more than two degrees. The operating rooms were unclean, and there were no medicines, or clean dressings. The customary ration for the patient was a half pound of black bread and soup from herring. The nurses, hungry and worn-out, did not care for the sick. The attendants, mostly ignorant and starved, often stole the food of the patients, and treated them cruelly. An acquaintance of mine, who was a patient at Botkin's hospital for contagious diseases, was beaten by an attendant because she required more attention than usual, and I could see the marks of the cruelties. The death rate in the hospitals was very high and the sick would not go there, with the result that the spread of contagious disease increased. The private clinics were robbed at the time they were nationalized, and today they are closed because the government has no means to operate them. Only a few drug dispensaries remain, and those few are practically empty. It is a fact that the drug stores did not even have castor oil or boric acid. Now, you can understand the position of the Russian doctor, who could not prescribe medicines, and certainly could not order a diet or recommend a rest for his starved and toiling patients.

Still worse is the political and material condition of the physicians. The Bolsheviks have declared that they, along with the other "intelligentsia," are bourgeoisie and counter revolutionists.

Many were killed, such as the famous Dr. Shingarow, who, while sick in a hospital, was put to death by a gang of sailors, and Dr. Grigoriem, wantonly killed by a group of soldiers. In the Central Hospital of the Red Army, where I was drafted to serve, Dr. Gramatchakow, the head of the hospital committee which examined convalescent patients, and Dr. Gelfin were both shot without trial on orders of the "tcheka" as a result of false charges of a gypsy woman and a man of low character, who, after a quarrel, accused one of the doctors of making a wound on his leg to prevent being drafted into the service, and the other for issuing a discharge certificate. Later the man and woman were also shot. Other medical men were confined for years in prison, including Professor Fyodorown, a noted surgeon.

Medical societies were forbidden and their funds for the benefit of the widows and orphans of doctors were seized. In their place, the Bolshevik regime created the "Union of Medical Sanitary Workers," and besides physicians equal membership was extended to nurses, the hospital watchmen, its janitors and firemen, its attendants and others engaged in minor employment about a hospital.

Over the doctors were placed ignorant, overbearing fellows, termed commissars. They often interfered with the physicians and made their life unbearable. Clashes between the commissars and the physicians were frequent but always to the advantage of the commissars.

The material condition of the doctors was even worse. Private practice was prohibited. Physicians were permitted to work only in hospitals and other places under the control of the Bolsheviks. Given insufficient amounts of food, they were compelled to seek other employment. They became easily susceptible to disease, and in the winter of 1920 about 200 physicians died. In the hospital where I was employed twenty-six of the fifty physicians were afflicted with typhus fever and six of that number died. When the epidemic waned in Petrograd, the physicians were sent to those districts where the fever was still raging, disregarding the personal welfare of the medical men or their home ties. In 1920, one hundred and fifty physicians were sent from Petrograd to the Bashkerier republic in the Ural mountains, where the pestilence called "tchuma" (bubonic plague) raged. It was

said that for each physician that was sent to this republic, which was not under the control of the Bolsheviks, they received one wagonload of flour and five oxen.

Now, conditions are changed. Doctors are permitted to have a private practice, and instead of rations are given money. But the improvement is small, for the residents of Petrograd are so poor that they can not pay for the services of the physician and the money itself is worthless. In February, 1922, my wages for that month from the Government were 400,000 rubles and the price of a pound of sugar was 500,000 rubles; a pound of butter, 700,000 rubles; a pound of bread, 30,000 rubles. In March my salary was doubled, and I was getting 800,000 rubles a month, but the prices then were: sugar, 1,000,000 a pound; butter, 1,200,000 a pound; and bread, 60,000 rubles a pound. In May, the doctor's fee for a visit was usually 1,000,000 rubles, but he had to make 40 visits to buy a pair of shoes and one hundred and twenty visits to buy a suit of clothes. You can find doctors who carry soap, thread, shoe laces, stockings, etc., for sale, in the same case that they formerly carried their instruments. There are doctors who have opened various stores, and others are clerking.

To encourage attendance of doctors, the "Union of Medical Sanitary Workers" offered ten pounds of apples and forty pounds of potatoes to each of the doctors who attended one meeting in the summer of 1921. In the winter of that year, each of the doctors in the service of the government was given a sort of bonus, consisting of a summer hat, a bed sheet, a towel, and a couple of shirts. Once, in the winter of 1920, the Red Cross of Norway gave to each of the doctors of Petrograd 20 pounds of fish, a half pound of cocoa and two pieces of soap. Doctors slept standing before the distributing place of the Red Cross in Petrograd that they might be there when the distribution began in the morning.

It is hoped that America, which is taking the greatest interest in the terrible condition of Russia, will come to the aid of the Russian doctors through associations of their colleagues in America. The doctors of Russia are in need of food and clothes. They are in need of medicine, instruments, and medical literature. And the sooner help comes the better—for time lost means all lost.

A REVIEW OF 153 CASES OF BLADDER STONE REMOVED BY LITHOTRITY*

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The ease with which even an inexperienced surgeon can perform cystostomy for stone has had a tendency to reduce the number of litholapaxies, since there are relatively few surgeons who are expert with the lithotrite. Granting that complications necessitating cystostomy occur in probably more than 50 per cent of cases of stone in the bladder, the results of lithotripsy are so much better that such a procedure should be followed unless definitely contraindicated. The contraindications are:

1. A stone of such large size that the jaws of a lithotrite will not embrace it.

2. A stone so nearly filling a contracted or deformed bladder that the lithotrite jaws cannot be opened.

3. Prostatic hypertrophy, bladder tumor, diverticulum, or other complications which would necessitate cystostomy following the removal of the stone. In cases of prostatic hypertrophy and vesical calculus in which there is some contraindication to cystostomy, litholapaxy can usually be performed under sacral or general anesthesia in spite of the prostatic obstruction. There are many cases, also, where a small prostatic hypertrophy is increased in size by the congestion due to the bladder stone and all residual urine and symptoms will disappear following the removal of the stone; this type of case should unquestionably have a litholapaxy. Stones in a deep diverticulum with narrow orifice require cystostomy, while those in shallow pockets can often be crushed and the pocket opened widely into the bladder by fulgurating the orifice.

4. If the nucleus of the stone is known to be of such physical character that it cannot be readily freed from the lithotrite, unless the operator is prepared, if necessary, to perform a cystostomy at the same place and time. For example: A rubber catheter head was broken off and left in the bladder of a woman, following an extensive resection of the sigmoid for carcinoma, and a stone formed before she was in condition to have the catheter head removed. The stone was partially crushed with a

*Read before the Minnesota State Medical Association, Minneapolis, October, 1922.

fenestrated lithotrite, but enough of the rubber was driven through the window to make it impossible to free the lithotrite from the stone, and it was impossible to remove the instrument from the bladder with the stone attached. After many futile attempts to free the instrument, the lithotrite was delivered as far as possible and the rubber then cut along the outside of the blade of the lithotrite with a pair of curved scissors inserted through the urethra. After removing the lithotrite the stone was so crushed that it and the rubber were easily removed through the urethra by a forceps. A second example was a man with a tight urethral stricture, who had years before broken off in the bladder a portion of a home-made sound composed of paraffin and chewing gum, around which a hard stone had formed. This stone was eventually removed without serious results, but as the nucleus and fragments adhered to the lithotrite at every bite the instrument had to be removed, cleaned and reintroduced ten or twelve times before all fragments were small enough to pass through a cystoscope. A cystostomy would have been better in this case.

5. If a stone is attached to the bladder wall, and if any operation has previously been performed on the bladder or adjacent structures. One of our two fatalities followed litholapaxy in a patient who gave a history of a herniotomy a year before. With the aid of the cystoscope a stone was found attached to the wall of the bladder. The stone was removed quickly and easily with a lithotrite; a suture, which apparently was the nucleus of the stone, came away without any appreciable force with one of the fragments. There were no unusual symptoms until the third day, when the patient died rather suddenly. Necropsy was refused, but clinically the diagnosis was peritonitis resulting from the removal of the extravescical portion of the suture.

6. Stones with a sharp foreign body, such as a hairpin or knife blade, as a nucleus, unless proved to be free in the bladder with the aid of a cystoscope. For example; a patient recently observed had a large stone in the bladder in which there was a wire hairpin. From the roentgenograms it appeared that both stone and pin could be removed with the lithotrite, but the cystoscope showed both ends of the pin protruding from the stone for three-fourths of an inch, and these were firmly fixed in the wall of the bladder. Subsequent cystostomy revealed that the pin had almost penetrated the wall of the bladder, and removal with the lithotrite might have caused a perforation.

The physician's lack of skill in the use of the lithotrite is usually cited as a contraindication to litholapaxy. With this I heartily disagree. Stone in the bladder is a chronic condition, and every case where litholapaxy is otherwise feasible can be referred to a urologist who is competent, and the patient should not be unnecessarily subjected to the higher mortality of cystostomy.

MAYO CLINIC SERIES

In a recent study of 606 cases of vesical calculus examined at the Mayo Clinic in fourteen years, the following facts were noted: A diagnosis of stone was made by roentgen-ray examination in 345 (76.83 per cent) of 449 cases, and by cystoscopic examination in 445 (98.88 per cent) of 450 cases. Vesical stone was undiagnosed and was discovered at operation for hypertrophic prostate (17) or stricture (2) in nineteen cases (3.13 per cent). In other words a positive diagnosis was made of stone by roentgen-ray or cystoscopy, or both, in 587 (96.86 per cent). In the nineteen undiagnosed cases a negative roentgen-ray report was given in six, no roentgen-ray examination was made in thirteen, a negative cystoscopic examination was made in three, and no cystoscopic examination was made in sixteen (Tables 1 and 2).

TABLE 1

RESULTS FOLLOWING LITHOLAPAXY AND CYSTOSTOMY					Other Methods or Stone Not Removed
		Litholapaxy	Suprapubic		
		Per cent	Cystostomy	Per cent	
Men	138	90.19	335	97.5	
Women	15	9.8	10	2.5	
Total	153	25.24	395	65.18	58
Recurrence of					
stone	12	7.84	18	4.55	
Mortality	2	1.3	34	8.6	
Days in hospital	4.2		14.27		

TABLE 2

TWELVE CASES IN WHICH STONE RECURRED FOLLOWING LITHOLAPAXY			Cause of the recurring stone	Cases
Cause of the original stone		Cases		
Disease of the prostate.....		4		6
Stone in the kidney.....		3		2
Stricture of urethra.....		2		1
Cord bladder		1		..
Cystitis with deformity.....		1		2
Diverticulum of the bladder..		1		1
		—		—
		12		12

Most of the recurrences were due to causes which, either on account of general health, or local condition, could not be removed, and in three cases were the result of pathologic conditions which developed after removal of the original stone. Often several years had elapsed between removal of the original stone and the recurrence. In order to guard against recurrences precautions as follows must be taken:

1. Roentgen-ray and cystoscopic examinations must be made after litholapaxy to be sure that all fragments are removed.
2. Infected kidneys should be treated with pelvic lavage or nephrectomy if necessary, and focal infections removed.
3. If there are stones in the kidney they should be removed.
4. Cystitis should be relieved by lavage and topical applications.
5. Causes of retention such as prostate or stricture must be removed if possible, or, if these cannot be removed, as in the case of atonic bladder, the regular removal of residual urine should be practiced.
6. Diverticula, if they retain urine, should be removed.
7. Hygienic and dietetic measures that benefit the general health should be adopted.

ANALYSIS OF TWO CASES FROM THE SERIES IN WHICH THE PATIENTS DIED FOLLOWING LITHOLAPAXY

Case A24902, a man, aged fifty-one years, died suddenly on the second day after removal of a stone attached to the wall of the bladder and with a suture as a nucleus. Herniotomy had been performed one year before. Necropsy was refused. The cause of death was apparently peritonitis.

Case A209326, a man, aged fifty-four years, had sloughing of the bladder and prostatic urethra with extravasation of urine sixteen days after operation. At necropsy right pyelonephritis with multiple abscesses and left hydronephrosis were found. This patient, with severe infection of the entire urinary tract and in poor general health, is the type that should have, besides general treatment, a permanent urethral catheter fastened in place immediately following litholapaxy and left in place until the cystitis disappears, as pointed out by Barney.*

The success with which caudal anesthesia can be used in cases of vesical calculus greatly increases

the scope of litholapaxy. Many patients with irritable bladders, nervous temperaments, large calculi, and so forth, who formerly would have required general anesthetics and in consequence usually had a cystostomy, can now have a very easy litholapaxy. It must be remembered, however, that the area affected by caudal anesthesia includes not only the urethra but the musculature of the bladder and lower ureter, and adequate instruments, such as some form of suction apparatus, are necessary in order to remove the fragments of stone from the bladder after crushing. Without caudal anesthesia it is easier to fill the bladder with water and allow contraction to force the fragments out through a tubular cystoscope. In females or in males with large urethras, large fragments of stone may be evacuated with ease through a Braasch cystoscope of 29 French caliber, consequently reducing the amount of crushing necessary. When only a few fragments so large that they will not pass through the cystoscope remain, these can often be reduced to the necessary diameter with a strong specimen-taker, thus obviating the necessity of reintroducing the lithotrite. One objection to a general anesthetic for lithotrity applies equally to a caudal anesthetic, namely, that in the absence of local sensation there is no intimation from the patient when the wall of the bladder is touched, and the operator must be doubly careful that the jaws of the lithotrite are free from the wall before tightening them.

Large fragments in the bladder, or stones in a diverticulum, can often be more rapidly and easily removed under observation with a modification of Young's rongeur than with the ordinary lithotrite. A non-fenestrated lithotrite should never be used, as fragments of stone often become lodged between the blades, and prevent closure, causing considerable difficulty in removing the instrument, and consequent damage to the urethra.

CONCLUSIONS

1. The mortality of litholapaxy is much lower than that of cystostomy, and the period of hospitalization shorter.
2. The difference in mortality more than compensates for the moderate increase in recurrences following litholapaxy.
3. The use of caudal anesthesia and permanent urethral drainage renders the lithotrite available to a large group of patients who would formerly have been subjected to the greater risk of cystostomy.

*Barney, J. D.: Observations on the treatment of vesical calculi; an analysis of 455 cases from the Massachusetts General Hospital. Boston Medical and Surgical Journal, 1922, cxxxi, 462-469.

THE BRONCHOSCOPIC EXTRACTION OF FOREIGN BODIES FROM THE AIR AND FOOD PASSAGES WITH A REPORT OF TWENTY-FIVE CASES*

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Twenty-five years ago, the first bronchoscopic extraction of a foreign body from the lung was accomplished by Killian, who sought to demonstrate that such a difficult operation could be successfully performed.

After satisfying himself that such an operation could be successfully performed, his next step was to fashion and to perfect the necessary instruments and to evolve proper methods for using them. While Killian was so engaged, other workers in different parts of the world were conducting similar experiments; and the result is that, at the present time, we have available several types of instruments as well as a fairly well-defined technique.

Jackson, in a recent article, states that the principal problem of broncho-esophagoscopy for foreign body removal is this: "The mechanical problem of disentanglement, disengagement or version of the foreign body" so that it will be in such a position that it can be removed. When bronchoscopy was in its infancy, the great problem confronting the operator was to insert the instrument and to locate the foreign body; disentanglement or disengagement was not taken into consideration: it was merely a question of find, grab and pull, regardless of consequences. The well-intentioned efforts of many of the earlier operators were disastrous. The bronchoscope is a difficult instrument to use safely, as was demonstrated in an institution with which I was connected at one time. In one instance, a bronchus was ruptured by a very excellent operator; in another instance, the esophagus was ruptured; in a third instance, there was a rupture of the stomach. These fatalities happened under the hands of trained men—not careless or inexperienced operators.

There are two types of instruments in general use: those with a proximal light, as Bruhning's;

those with a distal light, as Jackson's. Some men make use of either, or both, but it is my experience that the Jackson type is more satisfactory with small children—most of the foreign body cases occur in children. In adults, for examination purposes, especially of the esophagus, I prefer the Bruhning, as the lumen of the tube is larger.

The proximally lighted instrument contains a much larger electric lamp than is found in the distally lighted type and it will take the current from the rheostat in general use with little or no danger of burning out. In about seventy-five broncho-esophagoscopies I have never yet had the light burn out; and some of these examinations lasted for a considerable length of time. The lamp in the distally lighted instrument is so delicate that a battery should be used rather than the rheostat and an additional disadvantage is the fact that a double set of lights is necessary while inserting the bronchoscope through the laryngoscope. If this double set of lights were attached to rheostats, a short-circuit might result.

Careful consideration should be given to the type of anesthetic employed. Jackson, it is true, can, with his miraculous skill, remove a foreign body from the lung of a child in a few seconds and it is his advice that no anesthetic whatever be used. But to the bronchoscopist of average ability it is more often than not an advantage to have the patient with muscles relaxed, particularly in cases where the foreign body is large or has sharp edges. It cannot be controverted that ether adds to the danger of respiratory failure as a result of pressure by inordinately large foreign bodies. There are cases in which there seems to be very little contra-indication to a general anesthetic; but in others a real indication at times exists. In the case I am about to describe, a general anesthetic seemed to be advisable:

A boy twelve years old was referred to me by Dr. Douglas Wood. Reaching into some weeds for a lost ball, a sand burr attached itself to his finger. As his other hand was encumbered with a baseball glove, he attempted to remove the burr with his teeth with this result: He aspirated the burr. Vomiting immediately set in and the lad was unable to speak; there was some coughing, but no cyanosis nor difficulty in breathing. The father, a physician, was not unduly alarmed at the time and not until a week had elapsed did he realize that his son was not reacting as he should. The persistent loss of voice led him to examine the larynx, where he discovered the sand burr embedded in the right vocal cord.

The spasm of the laryngeal muscles was very pronounced

*Read before the Hennepin County Medical Society, October 2, 1922.

and every movement of the throat produced pain which augmented the spasm. The use of a local anesthetic in this case might have dislodged the foreign body, in which event there was nothing to prevent its falling into the trachea. With the use of ether, the spasm, cough and pain could readily be controlled. It was employed; the burr was removed; the boy returned to his home that evening; recovery was complete.

In the case of adults, local anesthesia is often sufficient, particularly in esophageal work: in such cases it is necessary to anesthetize the pharynx only, as the esophagus is insensitive. The insensibility of the esophagus is conclusively demonstrated by the fact that, in swallowing a hot liquid, there is no burning sensation after it passes the pharynx until it reaches the stomach.

A patient should never be in an upright position while a foreign body is being extracted because of the possibility of its being dislodged and falling into a position still more inaccessible. In my opinion, the safest and most satisfactory position is that evolved by Boyce—a position that Jackson advocates and recommends. The neck is bent in such a way as to make straight the curve in the cervical spine and, at the same time, to permit the head being turned laterally whenever necessary during the manipulation of the tube. In this connection I wish to emphasize the fact that no mean order of skill is required of the assistant to maintain the patient in the Boyce position. Good teamwork is of great importance in that it greatly ameliorates and obviates the difficulties of passing, and of working through, the tubes.

Time is an important factor in bronchoscopy, particularly in the case of young children; a half an hour is as long as one should work. It is advisable that a timekeeper be appointed before the operation in order that the operator may be apprised when thirty minutes have elapsed. Even if the efforts of the surgeon are almost crowned with success, it is safer to stop then and to make another attempt later. This holds good, although there are cases where it is necessary to use the bronchoscope repeatedly, as in a case I saw with Dr. McCannell, of Minot, North Dakota, where a child aspirated a head of wheat into the bronchus. After its removal, so much secretion formed continuously that it was necessary to aspirate through the tube every day, and occasionally several times daily, in order to keep the bronchi open.

If nothing but food were put into the mouth,

foreign body cases would be rare and infrequent, as only three per cent result from aspirating food and, in such cases, the food has been improperly prepared for digestion, either in the cooking or in the masticating. Foods which disintegrate quickly and readily—bread, meat or fruits—are usually coughed up without causing trouble. Many cases are recorded of bronchoscopic searches for foreign bodies of this nature, but, as a general rule, no foreign body is encountered. Two cases such as this have come under my observation. The first was a case, referred to me by Dr. J. S. Reynolds, of a man twenty-eight years of age, who swallowed a piece of chicken bone. He experienced pain in swallowing for the next twenty-four hours. Roentgen-ray examination was negative; esophagoscopy was also negative. The second case was that of an infant sixteen months old, referred to me by Dr. E. D. Anderson. The child had choked on a piece of bacon at the breakfast table. Although part of the bacon was recovered by the mother, the child wheezed and coughed for the rest of the day. The baby was not cyanotic, but was restless and sleepless. I saw the child at about 9 P. M. and found the esophagus clear, the vocal cords normal and the trachea clear. No search was made of the bronchi. The baby had no further symptoms.

There are various ways in which foreign bodies are aspirated, but the most usual one is this: while holding a foreign body in the mouth, children laugh and play, causing it to travel to the back of the pharynx; this induces a cough, the first stage of which is a long, deep inspiration with the glottis wide open, permitting the object to pass into the trachea. Certain foreign bodies, such as dust or soot, are so minute and infinitesimal that all of us, particularly dwellers in a city, inhale them every day; but they are provided for automatically—either encysted or expectorated. But what these defenses can do for us is limited and larger foreign bodies will always produce complications such as pulmonary abscesses, if allowed to remain in the lung indefinitely. For this reason, no case of a suspected foreign body should be dismissed until it is conclusively demonstrated that it is absent by physical examination, roentgen-ray and bronchoscopy. The fact that an exploring finger encounters nothing in the throat does not necessarily prove that no foreign body is present, as such a procedure might be the means of pushing the object from the laryngo-pharynx into the larynx.

It is of the utmost importance that a complete and accurate history of the accident be obtained, whenever it is possible to secure it. The first manifestation of a foreign body in the trachea is a paroxysm of coughing which may, or may not, be associated with cyanosis or marked difficulty in breathing. This is followed by a period of quiescence, which may last for only a few days, but which has been known to continue for months or even years. Many observers are deceived at this time into believing that no foreign body is present. Dr. E. D. Anderson referred to me a male infant fourteen months old who had experienced a sudden and severe coughing spell which abated after the mother patted him on the back. As his brothers and sisters were at that time suffering with colds and coughs, no further attention was paid to the infant until two days later when he started in with another severe fit of coughing and appeared to be quite sick. Dr. Anderson was called and found the child's temperature to be 104. His examination disclosed suppression of breath sounds over the right lung, similar to the atelectatic lung of the new-born. The child became progressively worse and had choking spells with severe cyanosis and marked retraction. No foreign body history could be obtained until at this juncture the mother admitted that the child was eating peanuts when first taken with his coughing spell. The diagnosis was now made of a foreign body in the right bronchus. Upon my arrival, the child was unconscious and cyanotic, being kept alive by means of oxygen inhalations and artificial respiration. A 5 mm. Bruhning tube was passed, the larynx and trachea were found to be clear, the child stopped breathing, which made it necessary to withdraw the tube slightly, starting respiration again. The tube was now passed as far as the bifurcation and pus was seen to come from the right bronchus. The child died. A post-mortem performed by Professor Bell, of the University of Minnesota, revealed a piece of peanut in the right bronchus just beyond the bifurcation, with much local reaction and a small spot of pneumonia.

It is possible that a history might disclose that a foreign body was coughed up, but that the symptoms still persist. The inflammatory reaction following the presence of a foreign body usually subsides very rapidly after its removal; but when the physical signs of obstruction to the bronchus persist, a bronchoscopy should be performed: first, to

ascertain if a residue of the foreign body remains; second, to remove it, if possible.

A girl two years of age was referred to me by Dr. Houston, of Arago, Minnesota. Four days earlier, the child aspirated a piece of peanut, resulting in a choking spell with coughing, which persisted for a period of three or four minutes. This was followed by noisy respiration, particularly after exertion. During the continuance of one attack of coughing, she raised two pieces of what appeared to be peanut. The roentgen-ray disclosed no foreign body, but it did give evidence of signs of irritation throughout the left lung, accompanied by emphysema. (Fig. 1.) Physical examination by the late Dr. Batchelder demonstrated that the left bronchus was partly occluded. Bronchoscopy showed no foreign body in either main bronchus or in any of the larger branches. The child lived for two months, at the expiration of which time she developed a septic pneumonia from which she died.



Fig. 1. Age 2 years. Peanut in right bronchus. Increased penetration of right lung due to obstructive emphysema, a valuable diagnostic sign when the foreign body casts no shadow in the X-ray.

My second illustration of this point is a case referred to me by Dr. Watson, of Royalton, Minnesota.

A father was shelling peanuts and feeding them to his two-year-old daughter. Suddenly she had a short and mild fit of coughing, after which she seemed to be normal. Seven days later, another attack of coughing set in, associated with much wheezing in the chest. On the ninth day Dr. Watson was consulted, who kept her under observation for a period of nine days, during which time she seemed to improve. At the end of that time, she underwent a severe fit of coughing, with cyanosis, with much difficulty in breathing, wheezing and a very high fever. She now coughed up five or six small pieces of peanut. This did not relieve the child to any degree and the right bronchus

gave evidence of being completely obstructed. She was sent to me for bronchoscopy. As the history disclosed that the child had coughed up five or six pieces of peanut, there was some doubt in my mind as to whether a foreign body was really present. Roentgen-ray examination disclosed no foreign body, but it did demonstrate emphysema of the right side (Fig. 1). Physical examination by Dr. Max Seham revealed complete obstruction of the right bronchus. The child was kept under observation for forty-eight hours without any noticeable change in her symptoms. Bronchoscopy showed the left bronchus clear, but the right bronchus was obstructed by a whitish slough-like material. The tube was passed through this into the lowest extremity of the right bronchus, but no foreign body was encountered. There was a slight reaction to the examination, but she seemed to be a little improved at the end of twenty-four hours. Physical examination then showed the right bronchus to be still obstructed. This condition persisted for five days longer and the child was rapidly losing ground, although there was no sign of pneumonia or pulmonary abscess. After consultation with Dr. Seham and Dr. Parker, it was decided to bronchoscope again as a last alternative. No foreign body was found. The child died and no post-mortem was obtainable.

Peanuts contain some substance—the exact nature of it is not now known—which is extremely irritating to the bronchial mucosa, making the lowly peanut one of the most dangerous and irritating foreign bodies with which we are obliged to deal: we have the chemical as well as the mechanical reaction to deal with. It is possible to remove a peanut and still leave the patient with a very violent bronchitis—a bronchitis that may persist for some little time. Mechanically, the removal is fraught with



Fig. 3. Age 18 years. Wire in esophagus for eighteen months, producing signs suggestive of pulmonary tuberculosis. Successfully removed by esophagoscopy in one minute. (See Fig. 6B.)

great difficulties because the lumen of the bronchus may be completely filled, necessitating some manipulation to obtain sufficient space for the forceps. Gentle manipulation is necessary to prevent the peanut from being broken into minute pieces—pieces that may penetrate such tiny bronchioles that it is impossible to remove them. More widespread publicity should be given to the menace of the peanut; they should never be given to small children. The profession should be on the alert to make as early a diagnosis as possible of peanut bronchitis: any child who is eating peanuts and is taken with a sudden fit of choking and coughing, followed by chills, fever, dyspnea, cyanosis—there may be bronchial irritation but no pneumonia—such a child should be bronchoscoped without delay. Procrastination may mean more local reaction, less general resistance and a more slender possibility of removing the foreign body.

Many cases disclose no history that might indicate the presence of a foreign body; and frequently students are graduated from very reputable institutions without being taught that a foreign body in a bronchus is capable of producing symptoms of tuberculosis, lung abscess, pneumonia, chronic bronchitis or bronchiectasis. It is well for the medical man to be on the alert for foreign bodies under such circumstances, as is demonstrated by the cases that I will detail here.

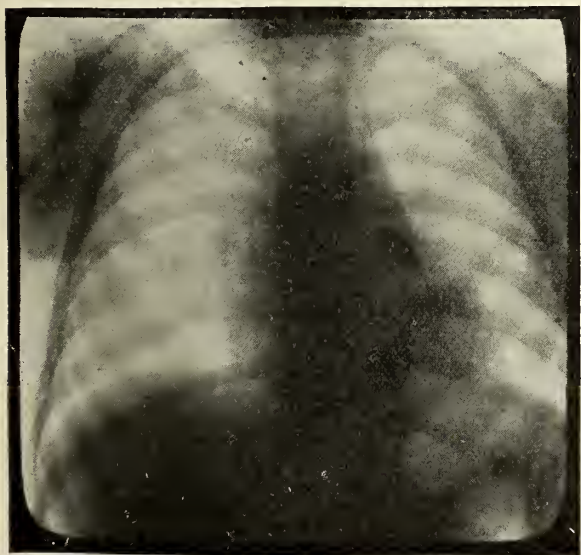


Fig. 2. Age 3 years. Piece of brass in the left main bronchus. Undiagnosed for two months. Successfully removed by upper bronchoscopy without anesthesia. (See Fig. 6A.)

A three-year-old boy referred to me by Dr. Arthur Bratrud, of Minneapolis, and by Dr. Fisher, of Thief River Falls, manifested noisy respirations for a period of eight weeks. The onset was not sudden, cyanosis was never observed and only a slight cough was evident; the child's general condition seemed good. Dr. Fisher was now consulted. He immediately x-rayed the chest and made a diagnosis of a foreign body in the lower left bronchus (Fig. 2). An unsuccessful bronchoscopy was performed at Thief River Falls, after which the little boy was brought to Minneapolis. Upon his arrival, there were signs of irritation in the chest and the temperature was 102. After a wait of two days, bronchoscopy was resorted to without anesthesia, the 5 mm. Bruhnings tube being used. The foreign body was grasped, but it was too large to be elevated through the tube, whereupon, tube, forceps and foreign body were all pulled up together. Unfortunately, the foreign body was lost at the glottis. Once more the tube was inserted and this time the foreign body was successfully removed. It proved to be a piece of brass (A-Fig. 6) rolled in such a manner that it would exactly fit a bronchus. Following the extraction, the child's chest remained clear, but he experienced difficulty in swallowing and a swelling made its appearance in the left submaxillary region. On the fourth day a large retroesophageal abscess could be seen behind the larynx. After it was drained, the child made a prompt recovery.

My next illustrative case is that of an adult woman, who complained of pain in her left ear—intermittent and augmented by swallowing. The ear, itself, seemed normal and the cause of the referred pain was sought. Examination of the larynx revealed the presence of a piece of bone a half an inch in diameter imbedded in the left arytenoid cartilage. It was removed and the pain vanished.

I am indebted to Dr. J. D. Lewis, chief of the department of Laryngology of the Minneapolis General Hospital, for the privilege of observing the third case.

An eighteen-year-old girl who complained of pain in the chest and epigastrium, which came on after eating; cough, bloody sputum and loss in weight. Her chest was x-rayed (Fig. 3) and a wire was discovered at the level of the fourth rib. She now remembered that, while making artificial flowers 18 months ago, she had swallowed a piece of wire. As she had no symptoms at that time, she had forgotten the occurrence. A bismuth meal was given and fluoroscopy located the wire in the esophagus by reason of the bismuth that clung to it. It was shaped like a fishhook and it appeared to perforate the esophagus, pointing anteriorly and to the left. It was necessary to give a general anesthetic because of the mental condition of the patient; the esophagoscope was passed and the wire was located. Upon grasping the wire, hemorrhage ensued, which obscured the view; thereupon the wire was rotated in an attempt to make it possible to exert traction with safety. Nothing further was done at this time. A second attempt was made six days later with Dr. Josevitch at the fluoroscope that I might

be apprised of the exact level of the wire. This time it was successfully removed.

In conclusion, I will give various cases in illustration of the points I have touched upon.

Dr. J. D. Lewis referred to me a child three years of age. While playing with some seed corn given him by his mother, at about eight o'clock in the morning he was seized with an attack of coughing and choking, accompanied by dyspnea. The mother rushed with her child to the city, arriving at my office while I was absent for lunch. Upon my return—about two o'clock—the child was dead.

It is my theory that the foreign body in this instance was located in the trachea, being forced into the glottis when the child coughed, causing asphyxia. This has been known to occur in cases where a child is hung up by the heels and shaken in an attempt to dislodge a foreign body.

In November, 1921, a child of twenty months developed a cough and experienced some difficulty in swallowing. The mother feared that the child had swallowed some object that had lodged in the throat. The physician could feel nothing with his finger and advised an x-ray. Unfortunately, the child developed scarlet fever before the x-ray could be taken. A cough persisted through and after the malady, upon which Dr. Eugene Williams was consulted. In conjunction with Dr. F. C. Rodda, an x-ray examination was made, an examination which revealed a foreign body—a lapel button, as we discovered later—in the esophagus at the level of the sterno-clavicular joint (Fig. 4). Dr. Williams and Dr. Rodda referred the case to me for esophagoscopy. Under ether anesthesia, the foreign body was found to be practically buried in granulation

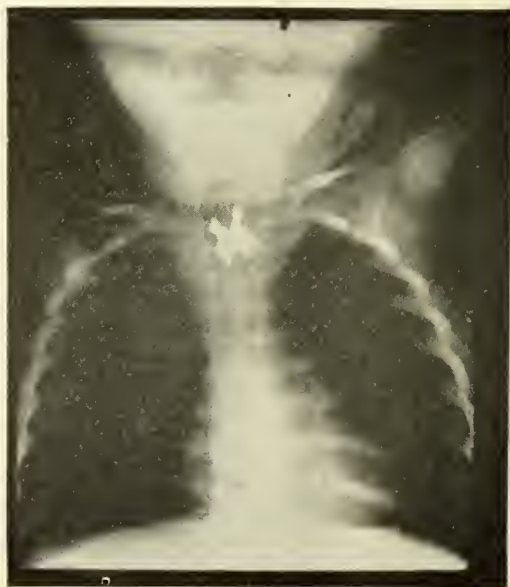


Fig. 4. Age 20 months. Foreign body (a lapel button of cross guns) lodged in the esophagus for six months. Removed by esophagoscopy in one minute. (See Fig. 6C.)

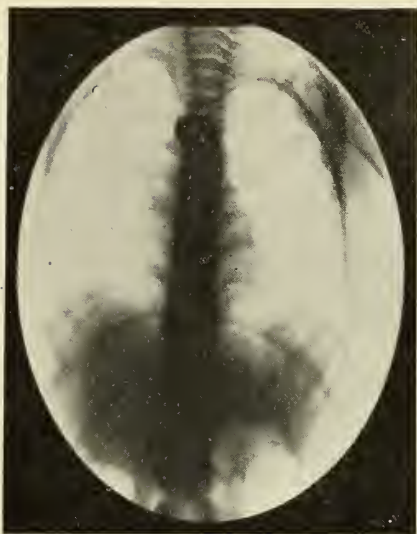


Fig. 5. Age 5 years. Two coins lodged in the esophagus. Removed one at a time by esophagoscopy in less than five minutes. (See Fig. 6D.)

tissue, which necessitated considerable manipulation before a safe plane was arrived at for the exertion of traction. The child was fed per rectum for 24 hours, after which he swallowed easily. The cough, however, persisted for a few days, but soon disappeared.

A three-year-old girl swallowed a nickel. The physician could not feel the object in the throat, whereupon he reassured the mother. For three weeks the child had difficulty in swallowing solid foods and lost weight. At the end of that time she had paroxysmal coughing spells, particularly after meals. Dr. Meland, of Warren, Minnesota, was then consulted, who x-rayed the chest and diagnosed a foreign body in the esophagus. He referred the case to me for esophagoscopy. The nickel was removed under a general anesthetic from the level of the cricoid cartilage. Perfect recovery resulted.

A girl six years of age referred to me by Dr. W. W. Feidt had swallowed a quarter two days previously. She had difficulty in swallowing solid foods and her voice was hoarse and husky. Fluoroscopy located the coin in the esophagus at the level of the first rib. It was removed under a general anesthetic in less than one minute and recovery was complete.

A mother saw her child of 18 months swallow a copper disk. He was brought to me and I removed it by esophagoscopy with no anesthetic. The child was taken home immediately and recovery was complete.

The next two cases differ from the foregoing in that in each instance two coins were lodged in the esophagus. In one case (Fig. 5), a separate manipulation was made for each coin; in the other, both were removed at once. A general anesthetic was used in both cases and recovery was complete.

While discussing these cases, it might be well to state that in each of the foregoing the coin cast a

round shadow on the x-ray plate taken in the antero-posterior position, thus conclusively demonstrating that it was in the esophagus. If it were in the trachea, the vocal cords would make it impossible for the coin to assume such a position.

The next three are safety-pin cases.

A female child seven months old referred by Dr. E. D. Anderson was seized with a sudden attack of vomiting; she was sleepless, irritable and nursed poorly because of dysphagia. The guard end of the safety pin could be seen with difficulty below the right tonsil. Without anesthesia the pin was pushed down the throat until the buried point was free and then removed.

In another instance a safety pin was lodged in the esophagus of a five-year-old girl, where it had been present for twenty-four hours. It was open, with the point up at the level of the upper end of the sternum. Under ether anesthesia the esophagoscope was used, the pin was pushed down until the point was freed, whereupon the point was pulled into the tube. Then pin, tube and forceps were removed simultaneously. The child left the hospital in twenty-four hours and recovery was complete.

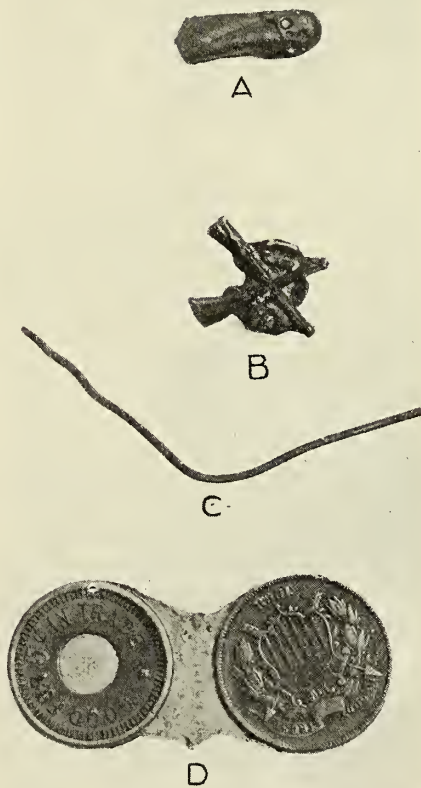


Fig. 6. (A) Piece of brass removed from left main bronchus. (B) Piece of wire removed from esophagus. (C) Lapel button removed from esophagus. (D) Two coins removed from esophagus.

A year-old boy, referred to me by Dr. Hewson, of Montrose, Minnesota, manifested symptoms of coughing and choking, while playing on the floor. His mother had not seen him swallow anything, but she suspected a foreign body. For a week his breathing was noisy and difficult, and he had no use of his vocal cords. He coughed frequently, slept very little and nursed poorly. Then he was sent to me. Physical examination was typical of laryngeal obstruction; there was no fever. X-ray examination revealed a safety pin open, and point up, in the larynx. It was removed under ether anesthesia in two minutes by laryngoscopy. Hoarseness and dyspnea improved at once and the child left the hospital in twenty-four hours in good condition.

The last case is that of a three-year-old girl referred to me by Dr. Rowe, of Duluth. She choked on a seed while eating watermelon and physical examination disclosed that the left bronchus was obstructed. Bronchoscopy was performed under a general anesthetic and the seed was removed from the left bronchus in seven minutes. Recovery was complete.

In the discussion of this most interesting subject, I have made no attempt to enter into exhaustive details, but I have sought merely to call to your attention its more salient features.

DISCUSSION

DR. J. D. LEWIS: I wish to congratulate Dr. Phelps on his presentation of the subject in such a practical way and so informally and on his splendid results. Some years ago I was much interested in bronchoscopy and esophagoscopy, but in the last five or six years I have not done any of it, not having either the time or the inclination.

These conditions are frequently missed by the general practitioner when the symptoms are quite frank. There is a psychological element about them, too; they know they are difficult to manage and regard them too lightly. In all cases where the foreign body was a peanut I lost every case, as I believe Dr. Phelps has. I knew of a young woman in the city who had a safety-pin in her lung for eighteen or twenty years which was successfully extracted by Dr. Jackson, now of Philadelphia.

DR. E. S. SROUT: I want to congratulate Dr. Phelps on his interesting paper which I have enjoyed very much. I think it is well to bear in mind that a patient carrying a foreign body for many years may give a history very indefinite and be treated for tuberculosis or another malady and prove to have a foreign body in the bronchus.

Jackson reported sixty cases in which foreign bodies were extracted from what were chronic cases. In some cases lung abscesses had been produced. Cases which are very obscure and giving no definite history are very misleading. After the foreign body has been recovered the patient recalls when the swallowing actually occurred. The symptoms are so mild for a time that the instance is overlooked.

DR. J. C. WATSON: I do not want to let this opportunity pass without congratulating Dr. Phelps, and I am glad

that somebody is taking up the work in Minneapolis. There is not enough of it to spread among all of us.

DR. H. NEWHART: I wish to congratulate Dr. Phelps on his interesting and illuminating paper. With the help of the x-ray and an early diagnosis, the bronchoscope in the hands of a skilled man leads to wonderful results.

We have already had pointed out the importance of the diagnosis on the part of the general practitioner and pediatrician. Every hour after the foreign body has been located adds to the difficulty of the operation and the outcome. With the x-ray it ought not to be possible to overlook the foreign body.

DR. DUNN: If Dr. Phelps had been at home last Saturday evening, he would have had another case to report. A woman came to me saying she had swallowed a chicken bone. I called Dr. Lewis and he referred me to Dr. Phelps. He was not available. Dr. R. Wilcox then suggested that I use the stomach tube and see if I could wash the bone out. I put in a pitcher of hot water, the patient vomited and a chicken bone about one inch long was removed.

DR. PHELPS, closing the discussion: I want to thank the gentlemen who have discussed the paper for their kind words. The subject is a fairly large one and I could talk about it a whole evening. The main point after all is the diagnosis, not to forget the possibility of a foreign body in chest and esophageal conditions, and not to be misled by the period of quiescence which lasts often for some time. That is the time to be on guard.

BILATERAL INDUCED PNEUMOTHORAX*

EVERETT K. GEER, M.D.

Pokegama Sanatorium
Saint Paul

Even before Koch discovered the etiology of tuberculosis in 1882, rest was recognized as being of paramount importance in the treatment of its pulmonary form, being advocated chiefly by Dettweiler on the continent and Trudeau in this country. Shortly after the unity of phthisis had been established, European workers, notably Forlanini, began to put the lung to rest more efficiently than rest in bed could accomplish. John B. Murphy, in this country, saw the possibilities in artificial pneumothorax but did not explore this field, feeling it belonged to the realm of medicine rather than of surgery.

Not till 1912 did American students of tuberculosis realize the potentialities of collapse therapy.

*Read before the Minnesota State Medical Association in Minneapolis, Minn., October 14, 1922.

But since then it has been used extensively and has robbed progressive unilateral pulmonary tuberculosis of much of its hopelessness. Other measures such as postural rest,¹ belts around the upper chest,² weights on the upper chest, plaster casts³ around the chest and slow diaphragmatic breathing⁴ have been advocated to secure better pulmonary rest, but these fade into unappreciable significance before the results of induced pneumothorax, given a pleural cavity reasonably free from adhesions.

Although we have been using induced pneumothorax with the collateral lung showing slight involvement, we have shied at a progressive bilateral

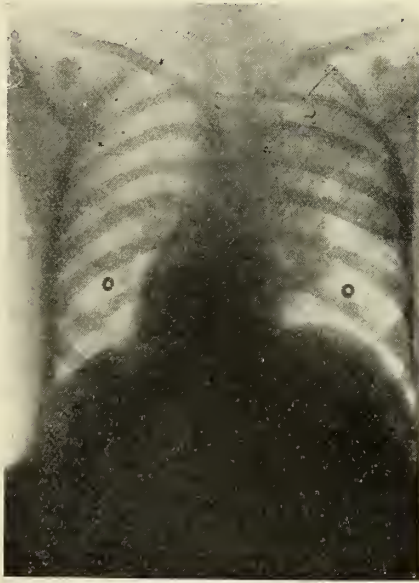


Fig. 1. Advanced tuberculosis, right lung (progressive).

case, feeling that a carefully supervised sanatorium régime was the best we could do.

Quite recently, however, a small patch of silver lining has been seen in this black ominous cloud of progressive bilateral lung tuberculosis. Barlow and Kramer⁵ have nicely shown that, with an upper lobe lesion, a pneumothorax can be instituted effecting a *partial* collapse of the upper lobe, leaving the healthy lower lobe to function normally. This partial collapse results from the induction of small amounts of air into the pleural cavity and physical and contractility. Lung tissue that is infiltrated with tuberculosis obviously is less expansile and less contractile than normal lung parenchyma. This impairment of expansibility is more marked than

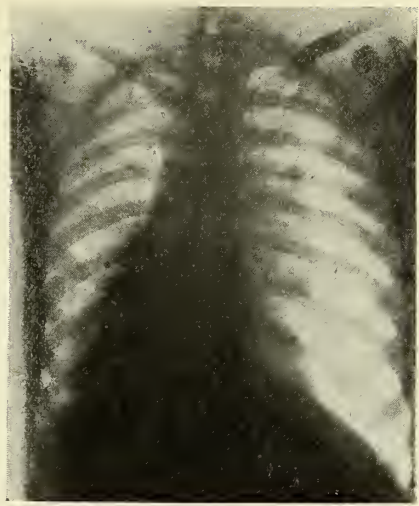


Fig. 2. Same case as Fig. 1, with right lung completely collapsed.

laws governing its disposition. The normal lung, being elastic, has a certain degree of expansibility the impairment of the contractile properties of the lung. Therefore, with the introduction of small amounts of air into the pleural space, the normal lung tissue expands as usual, forcing the air to localize over the diseased area, producing partial collapse thereof.

Most workers who have used artificial pneumothorax have noticed that in attempting to completely collapse one lung for an advanced unilateral lesion, not infrequently only a partial collapse was possible because of pleuritic adhesions and

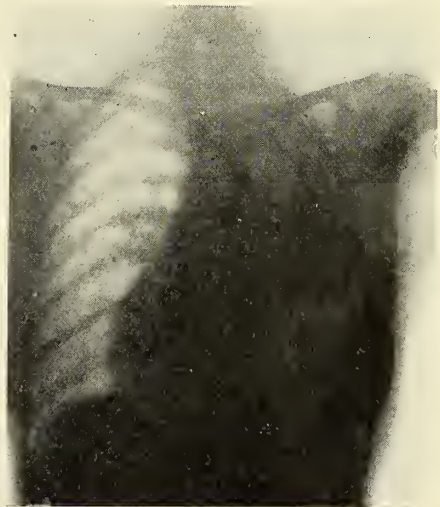


Fig. 3. Advanced tuberculosis, right lung (progressive).

furthermore that this partial collapse was sufficient to stop the progress of the disease. Such has been our experience in a number of cases. Hence the idea of a purposeful partial pneumothorax as advocated by Barlow is of more than theoretical interest because it gives us a very welcome and useful therapeutic measure in handling the bilateral case.

Fortunately we are endowed with more breathing space than we actually need. At rest, one-fifth or one-sixth of our normal lung capacity is quite sufficient to carry on adequate gaseous exchange. If, then, it is possible to partially collapse one upper lobe, leaving the lower lobe to function, why not do the same thing on the other side, if necessity demands, for the two lower lobes are more than enough to insure comfortable and sufficient respira-

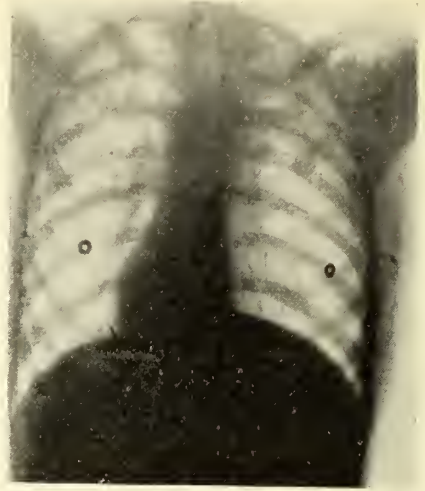


Fig. 5. Bilateral upper lobe tuberculosis (progressive).

It is vitally necessary to watch partial pneumothorax cases very closely. Frequent physical and roentgen-ray examinations must be made in order to secure uniform collapse. Without at least a fluoroscope available it is foolhardy to attempt bilateral collapse, because the most expert physical diagnostician cannot tell how completely or incompletely a lung may be collapsed, as it takes but a small amount of air between the lung and chest wall to wipe out all breath sounds. Barlow very wisely urges, before one attempts bilateral collapse, that he maintain a unilateral partial collapse for at least six weeks and also counsels strongly against

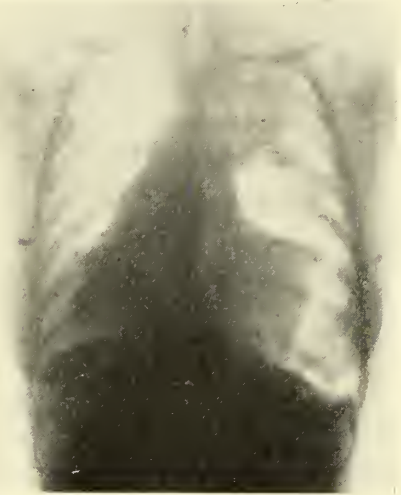


Fig. 4. Same case as Fig. 3. Complete collapse attempted but partial collapse only attained because of adhesions.

tion. Barlow was able to do this with no discomfort to the patient and with clinical improvement, and we have proved to our satisfaction that it is both possible and efficacious.

We have used the Robinson apparatus and the Floyd needle. Pleural shock, air embolus, perforation of the lung and lung rupture constitute the chief dangers of the procedure. The incidence of pleural effusion, the usual complication of complete pneumothorax, is held by Barlow to be greatly reduced with partial pneumothorax. The duration of treatment is as problematical as it is in complete collapse cases and should probably be not less than two years.



Fig. 6. Same case as Fig. 5. Partial collapse both upper lobes.

refilling both sides of a bilateral case on the same day. Both of these suggestions we have found to be quite pertinent.

It is readily seen that bilateral pneumothorax has a limited, but we believe definite, field of usefulness. It marks an unmistakable step forward in the treatment of bilateral progressive phthisis and, as such, merits use by those equipped to apply it. The lesion must be confined to the upper lobes and the overlying pleura non-adherent in order to be successful.

In presenting this subject my purpose is not to give ultimate results (years are required to do that) but rather to emphasize the fact that all cases of bilateral progressive tuberculosis of the lungs are not hopeless. We have a measure in bilateral pneumothorax which should be seriously considered before contenting ourselves merely with making the patient comfortable.

REFERENCES

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2. Sewall and Deveney: *Am. Rev. Tb.*, v, 547.
3. Leavitt: *Am. Rev. Tb.*, vi, 410.
4. Knopf: *Am. Rev. Tb.*, vi, 417.
5. Barlow and Kramer: *Am. Rev. Tb.*, vi, 75.

DISCUSSION

DR. E. S. MARIETTE, Glen Lake Sanatorium: We have not been able to co-operate with Dr. Barlow's work and Dr. Geer's work. We have attempted it but have not been able to carry it out because of adhesions over the diseased part which prevented a collapse of the diseased part but permitted a collapse of the healthy part, just what we did not want. However, I believe that it has a field as definite as pneumothorax, even though it is much more limited, and should never be neglected.

In our group of about forty cases, where pneumothorax was indicated and failed because of adhesions, we lost about 75 per cent. Where pneumothorax was successful we lost only about 20 per cent, showing a difference of 50 per cent between the successful and unsuccessful cases of pneumothorax, which proved conclusively to us that pneumothorax has a very definite place in pulmonary tuberculosis. Recently, wherever pneumothorax was indicated and could not be given because of adhesions, we have been trying extrapleural thoracoplasty; that means that portions of the ribs below the first are removed and this allows the side to collapse. The pleural cavity is not entered. If it had not been for this, three of our patients would have fallen into the 75 per cent of failures. Now they are getting much better and are going to be included in the 20 or 21 per cent of successes.

STATUS THYMICO-LYMPHATICUS IN INFANCY*

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Duluth

Symmers¹³ gives the following definition of status thymico-lymphaticus: "Status lymphaticus is a constitutional hereditary anomaly characterized anatomically by certain external peculiarities of configuration, by hyperplasia of the thymus gland and of the lymphoid tissues in other localities, by hypoplasia of the cardio-vascular apparatus, and incidentally by congenital structural defects in other viscera. Clinically the condition is not infrequently terminated by sudden death on apparently trivial provocation, oftenest in children, but occasionally in adults." This definition agrees very well with the views of the older authors, who, however, lay considerable stress on the frequent association with rickets. The earlier work on this subject was done almost exclusively by German investigators, notably Paltauf, Grawitz, Pott, Escherich, Nordmann and Kundrat. Starting about the late nineties, work was reported here, the excellent papers of Ewing and Ohlmacher being among the first.

The general trend at present is to separate thymic conditions into two main types: (1) a status thymicus, in which the thymus only is hyperplastic and gives symptoms presumably arising from itself alone, namely, dyspnea, cyanosis, and suffocative attacks; and (2) a status thymico-lymphaticus, in which besides a usual thymic enlargement there is a general hyperplasia of the lymphoid tissues throughout the body; these cases frequently terminate in sudden death.

It will not be amiss here to give a short outline regarding the development, size, and life cycle of the thymus. This gland develops as a paired organ from the third branchial clefts which unite early in fetal life.¹⁰ The sizes and shapes vary greatly. In the fetus the gland is either cervical or cervico-thoracic in location and tends to be quite broad; after the child breathes, it rapidly elongates and acquires imprints from the surrounding thoracic structures, due to increased intrathoracic pressure

*Presented before the Annual Meeting of the Minnesota State Medical Association, Minneapolis, October, 1922.

from lung expansion. It gradually becomes a thoracic organ.

The general opinion at present is that the gland is fully developed at birth, but may grow up to the age of two or three years, after which there is a slow gradual involution, often complete at or soon after puberty. In this respect, however, it is very interesting to note the recent work of Liss,⁷ who in a series of 119 newborns observed by means of roentgen pictures shows that chest shadows characteristic of enlarged thymi were found in 42 per cent. These cases were without symptoms and the majority of the roentgen shadows disappeared without roentgen ray treatment during the first year. Involution is usually brought about by a fatty displacement or a simple cirrhosis. It is the cases that do not involute which terminate in the sudden deaths of adult life.

Opinions as to the size of the gland necessary to cause symptoms vary. The German investigators considered a gland weighing 20 grams as normal. Howland, whose figures come from an examination of 500 newborns and stillbirths at term, gives the average weight as 5 or 6 grams. The general opinion has been that the average weight is 12 or 13 grams, and that glands larger than 15 grams are likely to give symptoms, though not necessarily. In status thymico-lymphaticus the thymus is not always enlarged.

The thymus contains two types of cells, the reticular cells and the thymic lymphocytes. The reticular cells are considered epithelial in origin, resulting from a direct transformation of the thymic anlage. The Hassal's corpuscles, small, concentrically striated bodies peculiar to the thymus, are to be considered modified reticular cells. The lymphocytes are very susceptible to change; they are the cells which melt away by roentgen ray exposures. Eosinophilic and pseudo-eosinophilic cells have been reported by some.

The function of the thymus is not at all certain. Parke and McClure,¹² in a very extensive study of its removal in dogs, found it not essential to life. Their findings showed no detectable alteration of the tissues, change in activity or intelligence, or restriction of growth, nor any alteration in the organs of internal secretion in these thymectomized animals.

Their statements are at variance with those of other investigators who have variously claimed for

the organ, regulation of blood pressure, regulation of growth, a relation to increased clot formation, and bony growth.

Pathologically, it is held that a strictly normal thymus is rather rare. It may be congenitally absent or obliterated by infections. Congenital lues is rather frequently associated with an enlarged thymus. Hemorrhages within the gland are not rare, especially in cases of sudden death with asphyxia. Hemorrhages within it are also seen in the newborn after a difficult labor; infections and phosphorus poisoning may also cause them. The usual pathology differs from the normal only in an increase of the lymphoid cells and number of follicles.

In status lymphaticus there are, however, pathological changes elsewhere in the body. There is usually a general lymphoid hyperplasia including the glands throughout the body, the tonsils and adenoids, the Peyer's patches, and the solitary follicles of the intestine. If the hyperplasia is not general it is most frequently seen in the mesenteric glands and intestinal wall lymphatics, especially in the solitary follicles. The spleen may be normal or moderately enlarged, with increase in the number and size of the Malpighian corpuscles; its sinuses are usually dilated and show an increased supply of blood. The heart and vessels usually show a hypoplasia, the aorta is often smaller than normal, the vessel walls are thinned, the muscular coats especially being lacking. The blood findings are not characteristic. As before mentioned, rickets is frequently associated. Especially in asphyxia and sudden death, hemorrhages into the thymus, pericardium, endocardium and pleura have been noted. Edema of the skin, lungs, or brain, eczema and thyroid enlargement are associated at times. It is frequently associated with tetany and other convulsive disorders of infancy. It often also occurs with grand mal in epileptics. Epileptics are especially prone to sudden death.

There is usually a distinctly lowered "vital resistance," as emphasized by Paltauf, demonstrated as a lowered ability to withstand infection. An example of this may be found in some cases of apparently mild diphtheria which quickly die in spite of prompt and sufficient dose of antitoxin.

A person with enlarged thymus and status lymphaticus may run a symptomless course until an accident or infection causes sudden death.

The symptoms of thymic enlargement alone, however, are usually four:

1. Dyspnea, permanent or intermittent, more often permanent. This then increases till a suffocative attack occurs, in which death frequently results.
2. Suffocative attacks.
3. Cyanosis, paroxysmal.
4. Stridor, either inspiratory, expiratory or both. It is more often inspiratory, as the thymus may be pushed high up into the sternal notch during expiration and then act as a momentary obstruction on inspiration.

Other symptoms less often found are voice changes, varying from slight hoarseness to aphonia (due to pressure on the trachea, larynx, or recurrent laryngeal nerve). Dysphagia has been found at times; also a tumor palpable at the suprasternal notch.

The above symptoms usually appear during the first year and may even be seen during the first few weeks of life. They may develop slowly or suddenly. The causes of these symptoms are not definitely understood; some consider them due entirely to compression by the enlarged gland.

The cause of the sudden death is another subject in which a variance of opinion exists. Kopp advanced the theory that death was due to the mechanical interference caused by the weight of the thymus on the heart, lungs and great vessels, either by direct pressure or by irritation of the recurrent laryngeal nerve. Grawitz modified this theory, believing that death was due to direct pressure on the trachea at the "critical space" at the apex of the thoracic dome, especially if the head were suddenly retracted. Pott's theory was that death was due to sudden arrest of the heart itself from pressure on the trachea, pulmonary artery, and right ventricle. Paltauf also ascribes death to sudden arrest of the heart but lays the blame on the lymphatic state. He says that persons in this state have a lowered vital resistance and a particular proneness to convulsive disorders, among which cardiac or respiratory spasm or paralysis are the most dangerous. In this light, spasm of the glottis becomes a reflex respiratory spasm and thymic sudden death a reflex cardiac paralysis; both in some way dependent upon the exaggerated irritability incidental to status lymphaticus.

Symmers explains it on the ground of an anaphylaxis, premising that substances absorbed from the intestines act upon the nuclei of the lymphoid cells in the germinal follicles of the lymph nodes, breaking them down into nucleo-proteins called "nuclear dust" which sensitize the body. During the anaphylactic incubation period so initiated the tissues are again subjected to the action of the same protein released in the lymph nodes in response to destructive substances formed or introduced during an apparently trivial injury, such as an antitoxin injection, thus completing the reaction with sudden death as a result.

Other opinions as to the cause of death include the spontaneous rupture of a hypoplastic cerebral vessel or an increased tendency to vascular thrombosis.

Ohlmacher has an idea that a periodic edema of the brain may be the cause.

Physical examination emphasizes the following:

A "thymic type" has been frequently mentioned. These children are usually well nourished and noticeably good looking, these attributes gaining for them the name of "angel child." However, they will frequently be found to be rather flabby and pale, with a tendency to eczema. They stand infection badly. In older life the bodily configuration of the male simulates that of the female; axillary and other hairs scanty, pubic hair sharply defined transversely; smooth, delicate skin, narrow waist, and graceful arching of the thighs. In the female the feminine characteristics are exceptionally pronounced.

At times there is an increased mediastinal dullness above the heart on percussion, extending beyond the sternum, usually more to the left than to the right. Percussion of the gland is rather difficult and must be done very lightly, with the patient lying flat on the back with the arms above the head and head semiflexed. With the head dorsiflexed there is an increase of the anteroposterior diameter of the chest and a correspondingly narrower area of dullness.

A gland weighing 17 grams may be percussed. Percussion is, however, frequently unsuccessful. Lung findings are frequent, varying from large, moist râles to the fine crackles of a capillary bronchitis. There may be hypertrophy and dilatation of the left ventricle.

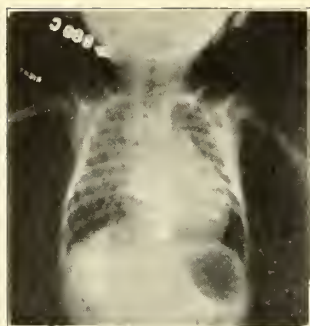


Figure 1. Roentgen ray of chest in Case 4. Enlarged thymic shadow extending down over the heart. Heart markedly enlarged, filling one-half the chest.

The roentgen ray offers us a distinct aid in diagnosis. Photographs must be carefully taken with special technic. Gerstenberger¹⁵ has shown that the picture may vary with the position of the diaphragm, an apparently enlarged thymus on deep expiration disappearing on deep inspiration. He advises roentgen rays taken at the end of both inspiration and expiration.

Blackfan and Little¹ state that the plate should be taken with the patient lying quietly on the back with head semiflexed to insure an average depth of chest.

The treatment for an enlarged thymus is repeated roentgen ray exposures. This should also be resorted to in cases of status thymico-lymphaticus, although here of distinctly less value. The roentgen ray will act on any lymphoid structure, such as the glands, spleen, or thymus, as well as the bone marrow and the white blood cells themselves. By regulation of the dosage, either stimulation,

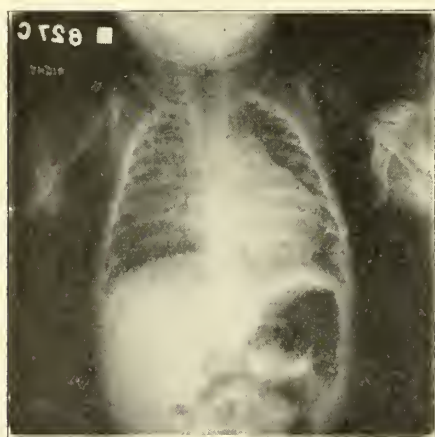


Figure 2. Roentgen ray of chest in Case 5. Enlarged wing-shaped thymic shadow and markedly enlarged heart.

inhibition or destruction may be obtained; the aim in thymus treatment is destruction.

In the average case of enlarged thymus, improvement will be noted in twenty-four to forty-eight hours after exposure. It is possible, as has been shown by animal experimentation, to elicit changes in the gland within eight hours. For this reason roentgen ray treatment should be given to urgent cases even if in apparent extremis. Death has occurred in such circumstances shortly after a treatment, and the parents should be advised of this danger.

During a period of about two months in the early part of this year there occurred in my practice five cases of this disease. It is seldom that one man sees such a series of cases within so short a time. The courses of all were short; they all ended fatally and were autopsied. The reports of these cases are, unfortunately, not as complete as I would desire, due to lack of facilities at the time; nevertheless they are of some value.

CASE 1.—Baby S., aged 8 months. April 11, 1922.

Family and Past History.—Essentially negative.

Present Illness.—Started one week before with fever for two days and a nasal discharge. Rhinitis continued without temperature till night of the eleventh. At 7 o'clock that evening appeared perfectly well, smiling and happy. It was left alone in bed. The parents returned two hours later to find it dead.



Figure 3. Posterior view of thymus from Case 4. Numerous hemorrhages over entire surface of gland.

Autopsy Report.—A well nourished child, no evidence of rickets, slight mucopurulent nasal discharge. Superficial lymph glands not enlarged. On opening the thorax the thymus was seen to cover the superior portion of the heart, extending a little to either side. There were two large lateral lobes, an isthmus with a lobe extending up into the neck 1 cm. above the suprasternal notch. It was rather thick antero-posteriorly and weighed 16 grams. There were numerous pin-point hemorrhages over its ex-

ternal surface and on section. The peribronchial glands were not enlarged. The lungs showed infrequent pin-point hemorrhages on the surface, but were otherwise normal in appearance. The spleen appeared large, with some apparent hemorrhages on the surface; the Malpighian corpuscles were prominent. The solitary follicles of the intestine, especially of the colon, were markedly enlarged, giving it a pebble-like appearance; intestines otherwise normal. The glands on the mesenteric attachment and those at the base of the mesentery were increased in number and size. The macroscopic appearance of the remaining organs were normal.

CASE 2.—Baby J., aged 1 month. May 27, 1922.

Family and Past Histories.—Essentially negative. Breast fed.

Present Illness.—For three nights previously the child had cried more than usual; fever was noted. On the night of the twenty-seventh it went to sleep at 11 P. M. and slept better than usual. At 4 A. M. it was seen to be

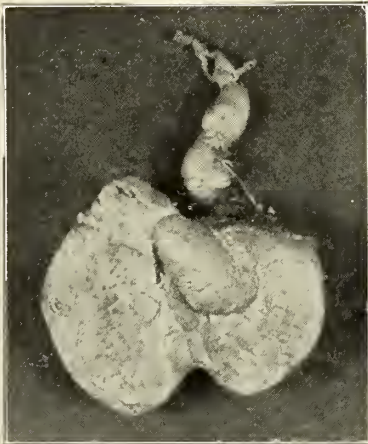


Figure 4. Posterior view of thymus from Case 1. Numerous pin-point hemorrhages over gland surface. Medium lobe extending up into the neck.

sleeping peacefully. At 6 A. M. it was found to be dead. I saw it one hour after death and performed an autopsy.

Autopsy Report.—The body was that of a fairly well nourished infant. There was a slight mucoid nasal discharge. None of the superficial lymph glands were palpable. The thymus covered the superior portion of the heart. It contained numerous pin-point hemorrhages throughout. The median lobe extended a slight distance above the suprasternal notch. It weighed 14.6 grams. Both pleural cavities, especially the right, contained a small amount of blood-stained serous fluid. There were several hemorrhages, the largest about 6 mm. in diameter, on the parietal pleura and the right diaphragmatic dome. Numerous hemorrhages, ranging from pin-point to 3 mm. in diameter, were present on the posterior surface of both lungs; otherwise the lungs appeared normal. The pericardial cavity contained a slight amount of serous fluid. On the anterior surface of the heart, especially around the origin of the great vessels, but also at the tip, were several small hemorrhages.

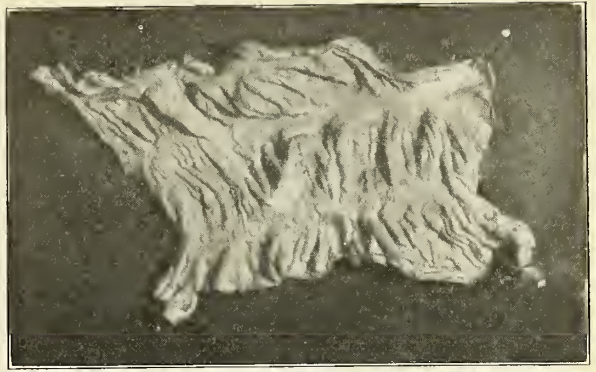


Figure 5. Section of intestine from Case 1. Marked enlargement of the solitary follicles of the intestine.

On the opening of the abdomen the omentum presented a peculiar swollen reddish appearance. A small amount of clear free fluid was present in the abdominal cavity. The peritoneum was smooth and glistening. The mesentery of the small intestine was reddish in color and contained numerous small, dark red lymph glands. There were a few petechial hemorrhages into the gastric mucosa, as well as in the intestines. The lymphoid follicles of the intestines were easily visible. The under surface of the liver gave a fine dark red, mottled appearance, apparently due to hemorrhages around the lobules. The spleen weighed 14 grams, and showed hemorrhagic blotching over the surface. There were numerous petechial hemorrhages throughout both kidneys and in the bladder mucosa. The head was opened; numerous petechial hemorrhages were found on the periosteum of the skull. The surface of the brain appeared congested, the cerebrum appeared normal, but there were petechial hemorrhages into the cerebellum.

CASE 3.—Baby D., age 9 months. May 6, 1922.

Family History.—Negative.

Past History.—Negative. It had been observed throughout most of its life at the Welfare Clinics, where its beauty and excellent physique had frequently been commented on.

Present Illness.—Brought in for croup, evidenced for two days previously. Examination showed a reddened throat

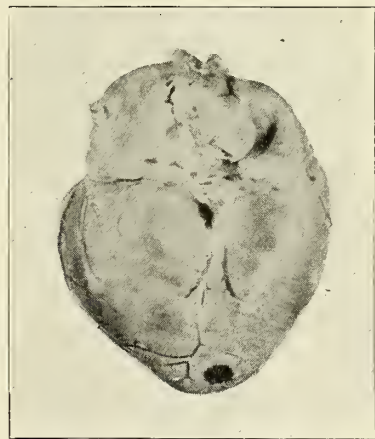


Figure 6. Heart from Case 4. Hemorrhages at tip and around the base.

and some stridor, both inspiratory and expiratory. Advised syrup of ipecac and steam inhalations.

Next day it was seen in the home at 5 P. M. Temperature then 100.2 degrees rectally; did not appear sick; happy. No stridor at rest but on struggling developed a moderate inspiratory and expiratory stridor. It was slightly hoarse; both ear drums were bright red. My impression at the time was that the child had a non-diphtheritic laryngitis. The mother was positive that the child's condition was improved over that of the previous day. At 11 P. M. it was sitting in bed cooing. There was no increase in stridor at 1 A. M. A few "catches" in the throat were noted at 1:40 A. M. At 2 A. M. there were several little "clicks" in the throat and the child was dead.

Autopsy Report.—A very well nourished and developed baby. Superficial lymph glands not enlarged. Thymus very large, covered the entire upper pole of the heart. There were a few small petechial hemorrhages at its upper pole. It weighed 27 grams. The heart and lungs showed no anomalies. The larynx and trachea showed only a mild reddening, no marked swelling. There was a frothy exudation on scraping the cut surface of the lungs, evidently some edema. The mesenteric lymph glands were practically normal in number and size. The solitary follicles of the intestines were enlarged and stood out prominently. The spleen appeared large with numerous prominent Malpighian corpuscles.

CASE 4.—Baby S. R., age 2 months. April 16, 1922.

Family History.—Negative.

Past History.—Negative. Breast fed every four hours.

Present Illness.—Started two days before admission with temperature of 100°, a slight cough and a tendency toward listlessness. This continued until brought in to the office.

Physical Examination.—Child evidently sick, temperature 99° (rectal). It lay limp; the respirations were accompanied by a slight wheeze, there was retraction of the epigastrium on inspiration and an expiratory grunt. Some yellowish post-nasal discharge. The heart was found to be large, extending 1.5 cm. outside the left nipple line in the fifth interspace, and enlarged proportionately in the upper interspaces. The sounds were of poor quality, the first sound frequently absent. The liver was palpable three finger breadths below the costal margin in the midline. The breath sounds were diminished on the right side. A roentgen ray was taken as soon as the child got to the hospital. This showed an enlarged heart and a definite thymus shadow. The course of the child was rapidly downhill during its four hours hospital stay with a fatal termination. It did not receive roentgen ray treatment.

Autopsy Report.—A well developed boy of two months. No superficial lymph gland enlargement. On opening the thorax there was slight amount of clear greenish fluid in the pleural sacs. The thymus was large, extending well down over the auricles of the heart and to either side; it was also rather thick. There were numerous hemorrhages on its surface ranging from pin-point to 3 mm. in diameter. It weighed 23 grams. There were several small bodies taken to be accessory thymi also present. The lungs were normal in appearance except for a few small pleural

hemorrhages. The heart was decidedly enlarged. There was a slight amount of clear, greenish fluid in the pericardial sac. On the heart's surface were many hemorrhages, most numerous at the base, with a rather large one, 1 cm. in diameter, near the apex.

On section the left ventricle was found to be greatly enlarged. Its walls were thickened while the cavity itself was about five times that of the right ventricle. No anomalies of the heart were found. The abdominal cavity yielded a small amount of fluid similar to that seen in the pericardium and pleura. The mesenteric glands were quite numerous but not enlarged. The liver was quite large, brownish yellow in color, bled easily, and gave the appearance of being congested. Spleen seemed slightly large and rather friable. There were areas of fine hemorrhage into the intestinal walls, the solitary follicles of the large intestine alone appeared increased in number. The kidneys showed fetal lobulations and a few petechial hemorrhages into the pelvis on the right.

CASE 5.—Baby P., age 1 month. February 15, 1922.

Family History.—Negative.

Past History.—Negative. Nursed three weeks; since then Mellin's Food every three hours.

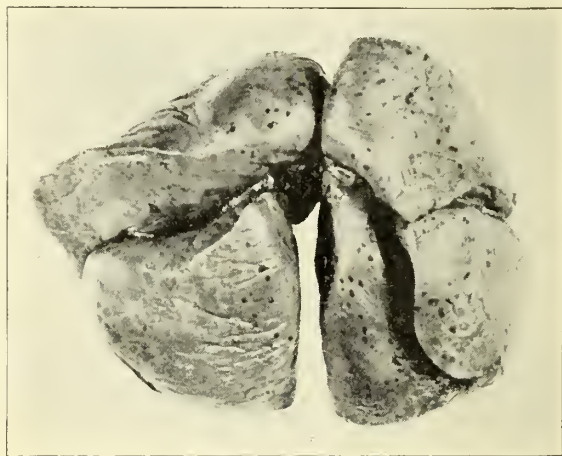


Figure 7. Lungs from Case 2. Petechial hemorrhages over the surface.

Present Illness.—Had had nose cold for two weeks; for the previous twenty-four hours, had been having "cramps," doubled up and became pale. There had been grunting respirations and a failure to take food.

Physical Examination.—A definitely sick child with a grunting respiration. Snuffles, muco-purulent post-nasal discharge. Some beading of ribs and marked craniotabes. There were no definite lung signs. Heart sounds were of fair quality. A roentgen ray of the chest showed a slightly enlarged heart without a definite thymus shadow; the plate was poor.

The child was sent to the hospital, where it passed the night without mishap. The following morning, however, it became pulseless and cyanotic with short, rapid, grunting respirations. Lung findings indefinite, the breath sounds at

the right upper posteriorly were rather high pitched and there were a few râles at the left heart border. The heart dullness was present 1.5 cm. outside the left nipple line, the sounds were muffled. It was resuscitated by a mustard pack but went into collapse again within an hour. No chest findings. Another roentgen ray at this time showed an enlarged heart with a suggestive thymic shadow. It was given a roentgen treatment for an enlarged thymus. The cyanotic attacks continued for about two hours more, when the patient died. It ran practically no temperature while under observation.

Autopsy Report.—Fairly well nourished child of one month with purulent nasal discharge. On opening the chest cavity the thymus was seen. It appeared large but did not extend over the heart to any extent and weighed 13 grams. The heart was large, dilated, full of blood and showed no gross anomalies. Both lungs showed a great deal of congestion posteriorly but practically no pneumonia grossly or on section. The abdominal findings were negative; the Malpighian corpuscles of the spleen were prominent. There was no enlargement of the lymphatic glands of the chest or abdomen.

Summary.—A study of the preceding cases emphasizes the following points:

1. These were all infants, the ages varying from one to nine months. They were apparently all normal babies previous to this illness. None had had any earlier illness. They all died with their first infection.

2. They all showed evidence of infection of comparative mildness, in every case an upper respiratory affair described as a "cold." These infections were not accompanied by any considerable amount of fever; in those cases where it was taken it never reached 101 degrees F. The illnesses were of short duration, three children having been sick only three days, while the others had had a cold for one to two weeks before with none other than the local symptoms.

3. Evidences of thymic pathology were found in all. Cases 3, 4 and 5 all showed stridor, while the last two named showed in addition a dyspnea which was, however, likely cardiac in origin. There was a definite roentgenologic shadow such as is generally considered to be due to an enlarged thymus in the only two cases to be roentgen rayed. In one case a thymic area of dullness was obtained on percussion. The post-mortem examination in all cases showed the thymus to weigh 13 grams or more, the largest weighing 27 grams. There were hemorrhages into the gland in four of the five cases.

4. Lymphoid hyperplasia found elsewhere in the body added to the picture materially. This was present in Cases 1, 2, 3 and 4, and was most evident



Figure 8. Kidney from Case 2. Petechial hemorrhages over the surface.

in the mesenteric glands and the solitary follicles of the intestines.

5. Sudden death was conspicuous in Cases 1, 2 and 3. This occurred practically without warning.

6. Evidence of a systemic disease was not lacking as is shown by hemorrhages elsewhere, notably in the lungs in Case 1; in the visceral and parietal pleura, visceral pericardium, stomach, intestines, kidneys, liver, spleen, brain and beneath the cranial periosteum, in Case 2. Cases No. 2 and 4 showed clear fluid in the pleural and abdominal cavities; unfortunately this was not cultured.

7. Two cases, numbers 4 and 5, showed large hearts with symptoms of cardiac dilatation in addition. On examination these hearts showed no evidence of congenital or acquired defect, and therefore might be considered to be part of the same general disease. Case 5 is certainly not as clear cut as the preceding Case No. 4; however, I believe it to belong in the same category because of the great similarity it bears.

In conclusion: I have thought it worth while to report the above cases because of the numerous interesting points which they bring to light, the variability in symptoms, physical and post-mortem findings. To my mind there was in each instance an associated infection which likely had a great deal to do with the fatal outcomes of all, having necessarily the thymico-lymphatic state as background. There is also a possibility that an acute hyperplasia of the lymphoid elements throughout the body may occur in response to infection and produce the picture of a status thymico-lymphaticus. The cardiac dilatation with symptoms of decompensation noted in Cases 4 and 5 is a point well remembered.

I wish to thank Mr. H. A. Tuttle for his painstaking work in preparing the pictures and slides for this work.

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DISCUSSION

DR. F. W. SCHLUTZ, Minneapolis: Few of us have seen so many cases of this type of condition in so short a period as has Dr. Kohlbry. While it is apparently a condition which is quite rare, it is, nevertheless, true that this type of child is not rare. We quite commonly see them in our office and can often determine that the condition is present. There is not alone an enlargement of the thymus, but a general lymphatic enlargement. To see a series of five deaths in a short period is really a rare experience. The feature that makes the occasional outcome of this condition so tragic is due to the fact that these children are usually considered prize children. The suddenness with which they pass out, seemingly without any reasonable cause, is absolutely startling.

I was fortunate upon two separate occasions to witness this kind of a death. It happened in one of the hospitals abroad. The nurse had just fed these infants. One was about eight months old and the other about seven months. They were unusually fine specimens. Everybody made a great deal of them because they were so attractive and looked so fine. In both instances they had just been fed.

It was not two minutes after and just as the nurse had turned away, that one of the children was dead, and the other one died in a very similar manner. Both cases came to autopsy, as it was suspected that death was due to an enlarged thymus. The thymus in one case weighed ten grams and the other twelve grams. These weights are a little less than was expected from a case of thymus enlargement according to the view of continental writers.

Sometimes a very insignificant affection will bring about sudden death of these cases. It is a common observation that the death frequently occurs immediately after feeding. It sometimes occurs after the use of vaccine or serum. Where this condition is suspected it is well to warn the parents of the possible consequences should the child develop diphtheria and should the use of antitoxin become necessary. It is my practice to give the maximum dose at one time so that repeated injections can be avoided.

Dr. Kohlbry mentioned the theory of Symmers, that the condition can be explained on the ground of anaphylactic shock. He has developed this theory in a very interesting manner, and it strikes me as a very good explanation of what is possibly found in this condition.

Many cases of status lymphaticus have spasmophilia as an associated condition. We know that it is dangerous to examine the throat or to depress the tongue in cases of spasmophilia. I had an experience of this type once. The mother brought the child in for laryngospasms and breath holding. I foolishly depressed the child's tongue in order to examine the throat. It immediately went into a pronounced spasm, from which it did not recover for what seemed an interminable time. I at first pacified the parents and told them that the child would come out all right, but soon became alarmed myself and used every means of resuscitation. When the child finally came to, the parents snatched the child and rushed from the room without saying a word and I have never seen them since.

If the suspected status lymphaticus case has marked electrical reactions and other spasmophilic symptoms it is probably well to avoid throat examinations or any other therapeutic procedure, such as the injection of serum, etc., as much as possible.

I have been impressed with heliotherapy as a therapeutic measure in these conditions. All other forms of light therapy should be equally beneficial.

The feeding is also a very important factor. I believe it unwise to give large amounts of cow's milk. Czerny has definitely shown what a pronounced effect dietetic procedure can have on these conditions. It is probably the most important factor in the whole treatment.

DR. ROOD TAYLOR, Minneapolis: There is no organ concerning which there is more opportunity for speculation than the thymus gland. There are many points concerning its function which we do not understand at all. The old idea of the child that died suddenly because of the enlarged thymus, because the size of the thymus had obstructed breathing, has a good deal to recommend it and a good deal against it. The thymus is soft enough so that it bears the impress of all the neighboring structures. Not all children who die suddenly die of enlarged thymus. Dr. Bell, Minnesota Professor of Pathology, told me of a little child who suddenly cried out and fell down stairs. The parents ran up and found the child dead. The pathologist

decided that the child died of an enlarged thymus. The next day a child of seven or eight gave the same cry and fell down stairs. They finally got in an electrician and when he reached a particular place on the stairway he found that a loose wire had come down through the roof and the child going up on its hands and knees got a shock and died. We have had several patients that died suddenly who did not have an enlarged thymus but some other condition to account for the sudden death.

DR. S. AMBERG, Rochester: The sudden death due to the enlarged thymus has naturally caused a great deal of discussion. I think it would be well not only to take into consideration the sudden death when there is a large thymus, but also those occurring in other conditions, as for instance, in cases of eczemas without an enlarged thymus. It might be well to look for causes of sudden death more connectedly instead of emphasizing the particular disease in which it happens.

DR. CARL O. KOHLBRY, Duluth (closing): Just a few words regarding convulsions associated with thymus disease. I think that status lymphaticus has likely been overworked as a cause for sudden convulsive deaths. It is not our place to put convulsive diseases of all sorts in the thymic category. Considerable work concerning the prevalence of status lymphaticus in convulsive diseases has been done by Ohlmacher of Ohio in a hospital for epileptics. He finds that enlarged thymi are associated with epilepsy more frequently than they are to be found in the general run of cases and that sudden deaths are frequently associated with this condition. I personally do not think that every thymic shadow shown up by roentgen ray necessarily means that the child will be subject to symptoms of enlarged thymus. Several recent papers have markedly demonstrated this. I have roentgen ray pictures of three or four cases with enlarged thymic shadows giving no definite symptoms. I have, however, given each one of these one or more x-ray treatments as a safeguard. The literature also mentions its association with eczema as noted by Dr. Amberg. I feel, however, as he does, that we should not diagnose every case of sudden death in eczema as status lymphaticus without very definite anatomical findings.

A STUDY OF THE TONSIL QUESTION WITH A PRELIMINARY REPORT OF ROENTGEN RAY AND RADIUM THERAPY IN THE TREATMENT OF PATHOLOGIC TONSILS*

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The tonsil question is still one of the most discussed in medicine. The object of this paper is to give a concise statement of the facts, to make a plea for more careful study of each case before deciding

on the form of treatment indicated and to give a preliminary report on the newer methods of therapy with roentgen ray and radium.

Too little attention has been paid to the after results of tonsillectomy and too many operations are done without securing permanent results. The value or disadvantage of tonsillectomy and adenoidectomy can only be ascertained by the study of large groups over a period of several years. Too little follow-up work after operation has been done in the past.

Function of the Tonsil.—It is remarkable so little attention has been paid, to the function of an organ so easily inspected and so often diseased. Its embryological development should lead us to believe that it has as definite a function as the thyroid, parathyroid or thymus. Barnes says, "That the tonsils are atavistic in nature and therefore without function, there is not the slightest reason to believe."

Digby in his recent monograph, *Immunity in Health*, shows the tonsil is largely a subepithelial tissue similar to the Peyer's patch of the intestine and not a lymphatic gland, as so often taught. This tissue is composed of lymph follicles which contain leucocytes in large numbers. These are constantly engulfing bacteria where bacterial activities are greatest.

Mackenzie, Wilson, Schäfer, Stöhr, Adami, Fox, Barnes, and others all agree that lymphocytes, phagocytic in character, are found in the tonsils. Large numbers of these pass into the blood while others wander through the epithelium into the crypts and become a part of the cheesy masses often found in the crypts.

May not a further proof of some function be noted in the many attempts of Nature to fill the fossa again after careful enucleation? Also, that Kaiser found 22 per cent of 5,000 children without previous glandular enlargement prior to operation showing glandular enlargement within one year after operation.

It has been noted by many observers that absence of the tonsils does not protect from serious throat involvement in epidemic sore throat outbreaks. Zahorsky has frequently observed that the child beginning school life without its tonsils is in greater danger of contagious disease than one who has his tonsils. Kaiser says it is doubtful whether tonsillectomy lessens the incidence to contagious disease.

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Résumé of Large Group Studies.—The Johns Hopkins Hospital Report is based on 1,000 cases. The patients were examined before operation and from one to four years after operation. The report is most complete and shows the following facts:

1. Fifty-eight per cent showed mouth breathing after operation.
2. Fifty-five per cent showed evidences of tissue left after operation.
3. Forty per cent of operated patients are just as liable to sore throat after operation as before, the angina often being more diffuse.
4. Tonsillectomy is rarely of benefit in deforming arthritis, never in acute chorea, rarely in acute rheumatic fever, endocarditis, and chronic kidney lesion.
5. Only 25 per cent of the children of Baltimore have definite indication for the removal of the adenoids.

Stewart shows the following immediate results in 10,756 tonsillectomies:

Deaths	15
Primary hemorrhage	132
Secondary hemorrhage	79
Hemophiliacs	26
Bronchiectasis	3
Pulmonary abscess	1
Sepsis	9
Ear infection after operation, many replies frequent	35
Shock, many replies frequent.....	19

Frequent reports of lung abscess and pneumonia following tonsillectomy appear in the literature. Heuer recently collected some 200 cases in the past ten years. Many more occur which are never reported.

Kaiser studied 1,200 children as to the effects of tonsillectomy on underweight and malnutrition. He found 66 per cent normal or overweight before operation. Of the 34 per cent underweight and malnourished 15.9 per cent were still underweight nine to twelve months after operation, 7 per cent of the total number were relatively in poorer nutrition at the time of re-examination than at the time of operation. He concluded that diseased tonsils and adenoids do not necessarily impair nutrition.

MacWhinnie likewise has shown that it was a common complaint that the patient did not gain in weight following tonsillectomy and showed the gain

was more rapid with the method of fulguration treatment. He was able to show a gain of from five to twelve pounds.

J. C. Beck, who has had large experience, states tonsils are the focus of infection in 20 per cent of chronic infections due to focal disease. Davis, after examination of 7,500 school children yearly for three years, states cervical glands enlarge as often after operation as before removal. Davis noted the tendency to mouth breathing after skilled and careful operation, and concludes that the original cause of the growths, whatever it may be, is present and active until a much later period. Some writers give as high as 41 per cent of enlarged glands after operation.

Bacteriology of the Tonsil.—Kellert studied a large number of tonsils removed from healthy young adults. He found no bacteria in the lymphoid tissue of the tonsils and concluded that the importance of tonsils and teeth as portals of entry of hematogenous infection are exaggerated. He believes the streptococcus is a saprophyte. This agrees with the Blanton, Burnham and Hunter investigations.

Keilty studied 388 cases and shows that the tonsils may be considered inactive foci of infection. He was unable to offer any proof that organisms present are poured into the circulation.

Pilot and Davis found streptococcus hemolyticus in 97 per cent of tonsils examined by them and Tongs in 80 per cent of a small group of children. They also demonstrated operation does not entirely do away with these bacteria.

Gottlieb found only one in twenty-four cases of streptococci virulent. No one questions the damaging effects of streptococci but the latest studies seem to show that the tonsil is a natural habitat of this organism and unless the mucous membrane is broken or the resistance lowered it does not enter the circulation or cause lesions.

End Results of Tonsillectomy.—What we want are the end results. These are of the most importance to the patient and physician.

Blauner and Orgel in a very recent report of the end results in 100 tonsillectomies and adenectomies in children one year after operation found as follows:

1. Fifty-one per cent were unimproved from frequent colds.

2. Fifty per cent showed no improvement in mouth breathing.
3. One hundred per cent no improvement from asthma.
4. Seventy-five per cent no improvement in cardiac lesions.
5. Thirteen per cent of the total were made worse by operation.
6. Eighty-three per cent showed improvement from tonsillitis, particularly that associated with rheumatic manifestations.
7. Sixty-six per cent of a small group of otitis media cases were benefited.
8. Fifty-seven per cent showed no improvement where the operation was done upon the advice of nurse or teacher.

The latter point is of importance, as so many nurses and teachers urge parents to have children operated on or be excluded from school. A survey made by the writer this summer of 108 patients, two years or more after operation (ninety-four of the number were children) shows a similar condition. More mouth breathing was encountered, also the number of ear complications without improvement after operation was larger than in the above report.

All these results taken from observations of over 30,000 patients should cause us to pause and ask ourselves whether we are giving the best advice in recommending operation to every patient with tonsil or adenoid disease. The laryngological section of the Royal Society of Medicine recently recommended fewer operations and more attention to proper feeding and the condition of the intestinal tract in the prevention of nasal and throat troubles. The writer is becoming more convinced of the tremendous importance of the latter fact in the production of nasal and throat irritation, also of the tubercular diathesis as a cause of tonsil hypertrophy.

Causes of Tonsil and Adenoid Hypertrophy.—Conservative science demands that we pay more attention to the causes of tonsil and adenoid disease. Diseased tonsils and adenoids are more often the result of some systemic disturbance, long continued hygienic errors, faulty metabolism and endocrine imbalance than the actual cause of disease. The more important causes of tonsil and adenoid hypertrophy are:

1. Oral sepsis—greater attention must be paid to mouth hygiene.
2. Nasal sinus disease, often overlooked, may be the cause of repeated sore throats.
3. Diet, especially in childhood, is an exceedingly important factor. Errors of diet have given the exact clinical picture seen in some cases of enlarged tonsils and adenoids. The enormous consumption of sweets, the almost universal use of patent flours and cereals with their lack of calcium, also the lack of vegetables and fruits so prevalent in the diet of children are among the most important factors in the causation of naso-pharyngeal pathology of childhood.
4. Syphilis must never be overlooked and in a considerable number either an inherited or primary infection exists.

5. Lack of fresh air and sunshine together with an inherited tendency to lymphoid hyperplasia as seen in some families may be a causal factor.

6. Insufficient thyroid functioning due to frequent infections as well as an imbalance of other ductless glands appears to be associated with a fair number of tonsil hypertrophies.

Methods of Treatment.—Treatment must look to the removal of the cause of the tonsil disease. Cleaning up a badly infected mouth is absolutely necessary before instituting any form of treatment.

During the past five years considerable work has been done with the desiccation or fulguration method of Clark. This method is especially good in tuberculosis. The report of the North Carolina Sanitarium is most encouraging.

Indications for Operation.—Patients with the following tonsil conditions should be operated, unless presenting serious heart, pulmonary or grave physical condition contraindicating operation:

1. History of repeated attacks of tonsillitis and peritonsillar abscess.
2. Small, firm, sclerosed, submerged tonsils with frequent sore throats.
3. Badly diseased and abscessed tonsils causing acute polyarthritis, acute kidney, certain eye lesions or other definite evidences of focal infection.
4. Cases of rapidly increasing deafness and ear infection due clearly to diseased tonsils and adenoids.

Roentgen Ray and Radium Therapy.—For more than fifteen years it has been known that the roentgen ray has a very definite destroying action on lymph tissue. Animal experimentation has conclusively shown with proper exposure it is possible to practically remove all lymph tissue without producing any changes in other organs or tissues.

The tonsils, as previously stated, are largely composed of lymph follicles. This fact led Witherbee, then with the Rockefeller Institute, to try the effect of the roentgen ray on hypertrophied tonsils and infected lymph tissue of the naso-pharynx. Since reporting his first series of cases he has treated more than 500 patients with excellent results, and no unfavorable symptoms. The results have been most gratifying in chorea, rheumatism, and cardiac cases, types which have not so easily been helped by tonsillectomy. Hermann and others who have had considerable experience with this method have likewise been able to verify Witherbee's results especially in the cardiac, chorea, and malnourished patients.

Hickey of Detroit tried this method with diphtheria carriers and had 80 per cent of cures, many of the patients becoming free of the bacilli with one treatment and within four days of its application. Kahn of Toledo in a private communication states he has treated 200 carriers for the Toledo Board of Health, 152 of whom could be traced and recultured at least ninety days after treatment. Seventy per cent of the 152 showed a cure, and 72 per cent of the total number became free of the bacilli with one treatment. Only one patient required as many as four treatments. All the cases showing relapse were negative for virulency.

The question arises, will the method be permanent? That it will be so in a large number of the cases if sufficiently carried out is very clearly shown by the work of Price, who selected forty-eight cases of cervical adenitis, tuberculous or otherwise. Some of the patients had been treated and observed as many as twelve years. Twenty-nine, or 62 per cent, showed normal throats and gave no history of any throat trouble since the treatment of the glands, whereas they had nearly all had trouble previously. Eight, or 16 per cent, showed slight tonsil disease but no symptoms, making a total of 78 per cent symptomless, while the remaining eleven, or 22 per cent, showed definite tonsil or adenoid disease. Remember results were obtained with treatment directed to the adenitis only.

Lafferty and Phillips examined a series four to six years after treatment and found the patients remarkably free from throat pathology. Van Allen was able to show 80 per cent of fifty patients without further attacks of sore throat and the tonsils ceased to be a menace. These cases were followed for three years. Likewise we could quote many others. This surely is fully equal to any results obtained with operative means.

Simpson, Wells, Williams, Osgood and others report excellent and striking results with radium in tonsil therapy. While the writer's results with radium are too early in most cases to decide definitely, the results so far look better than with the x-ray alone. The shortness of time required for treatment and the ease of application make this method an advantageous one. There is no hemorrhage, no loss of time and not the slightest discomfort afterward. That the roentgen ray and radium are harmless if properly applied is shown by the reports of a large number of tuberculous gland cases treated throughout the world. Review of the literature does not reveal a single untoward effect of the roentgen ray on the thyroid, parathyroid, pituitary, parotid or other adjacent tissue with this form of therapy.

REPORT OF CASES

During the year ending September 30, 1922, the writer has had under treatment and followed up fifty-two patients treated with roentgen ray and twenty-four treated with radium or both combined. We have made bacteriological studies of many of these patients and have found a decided lessening of the number of bacteria; in several cases the streptococci have been entirely absent as long as ten months after treatment. We make no claims that it will do away entirely with the bacteria, but are convinced the mechanical drainage established through the shrinkage and narrowing of the crypts is beneficial in reducing the bacterial flora of the tonsils and naso-pharyngeal tissues.

One patient treated in the second month of pregnancy who had troublesome sore throats and arthritis has remained free from sore throat and arthritis for nearly a year and has a fine healthy babe. In our series there were four cases with notable thyroid enlargement. In all improvement in the size of the thyroid has been noted.

Seven cases we were unable to follow and obtain

re-examination, but three replied saying they were some better and free from sore throat. One patient had a tonsillectomy; she took but three treatments and stopped against our advice. The remaining three were lost track of. One other patient has had a tonsillectomy by the writer a few weeks ago. This patient, E. L., a young woman, aged 20, had very large tonsils with deep crypts. She received four treatments; the size not being much reduced she consulted a general practitioner who advised removal of the tonsils. She did not have this done, however, until about eight months after the treatments. At the time of operation the tonsils showed no signs of inflammation, the pillars and tonsils were of a healthy pink color and the tonsils just outside the pillars. The only subjective symptoms present since the treatments had been a sudden enlargement of the thyroid about two weeks before she sought operation. This she connected with the tonsils as several times in years past she had had this swelling following sore throats.

Dr. F. Grave sectioned the tonsils and reports as follows: There is diminution in the size of the tonsils. Sections show atrophy of the lymphoid follicles and an increase of fibrous tissue particularly surrounding the follicles and crypts. Cultures from the crypts are negative. This patient had just a year before shown streptococci and a gram negative micrococcus. The tonsils were so firm and adherent that considerable difficulty was experienced in enucleating them.

Of the remaining fifteen patients not shown in the table below all are doing well except one. These patients have been under observation four months or less and are too early to report. Only three showed a mild skin reaction and this quickly disappeared. Several complained of swelling of the glands for twenty-four hours and one or two of dryness of the mouth, but these were only temporary symptoms. The ages of patients have been from three and a half to seventy-two years, a little less than half being under sixteen.

Three patients still have very red throats, but it is a diffuse, bright redness and the same type of throat was encountered several times in the tonsil survey recently made by the writer. As to the cause, we are unable to offer any explanation. All the patients were symptomless and said they had had this color for some time.

RESULTS EIGHT MONTHS TO ONE YEAR AFTER TREATMENT

	No. Cases	Im-proved	Not Im-proved
Hypertrophied tonsils	20	18	2
Small fibrous tonsils.....	4	2	2
Mouth breathing, adenoids.....	15	15	
Cervical adenitis	17	17	
Otitis media suppurative.....	4	4	
Otitis media non-suppurative.....	3	3	
Cardiac lesions	1	1	
Gain in weight.....	22		2

In addition to the above, four patients who have had previous tonsillectomies with symptoms still persisting after operation have had this form of therapy. All had large follicles and tags of tissue and showed glandular enlargement; three had arthritis, and one asthma; all had repeated attacks of sore throat and colds.

The patient with asthma has been entirely free from all symptoms for six months; one of the arthritis cases has improved and as to the other two, it is too early to give a definite opinion. All have shown decided shrinkage of the follicles.

All the patients with cervical adenitis have shown reduction in the size of the glands and the majority have become entirely impalpable. The most striking results have been with children and adults of a decided lymphoid hyperplasia type.

A great deal of attention has been paid to the appearance of the throat after each treatment before deciding on further treatment or the time of the next application. Likewise special attention has been paid to ascertaining the primary cause of the tonsil hypertrophy and steps taken to remove it. We have paid special attention to the teeth, the diet, and the breaking up of the habit of mouth breathing.

CONCLUSIONS

1. Study of more than 30,000 patients from various sources one to four years after operation shows permanent results in only about one-half of the total number.
2. The tonsil has some function and greater care should be taken to preserve this, especially in childhood.
3. Greater care is necessary in studying patients with tonsil disease and in selecting cases for operation.
4. Roentgen ray and radium offer a safe method of treatment in carefully selected cases.
5. Results have been most striking in children and adults of a decided lymphoid hyperplasia type,

also in patients with cervical adenitis associated with tonsil pathology.

6. Longer study is needed to prove the permanent disappearance of all symptoms accompanying tonsil and adenoid disease, and some further investigation on the types of tonsils best suited to this form of therapy.

In conclusion, I wish to thank Dr. F. S. Bissell and Dr. Floyd Grave, who have given so generously of their time to the roentgen ray and laboratory part of this study.

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DISCUSSION

F. S. BISSELL, Minneapolis: Dr. Lane has asked me to discuss the treatment by radiation of diseased or hypertrophied tonsils and the impression gained through our observations of a series of cases. I shall devote little time to a review of the literature, since that has already been done by the essayist, but shall confine my remarks largely to personal observations.

In considering this subject it must be borne in mind that while radiation therapy has been applied directly to tonsils but a relatively short time the marked susceptibility of lymphoid structures to the effects of radiation has been well understood. It has been observed in the leukemias and the enlarged thymus of infancy. It has also been noted that lymphocytes disappear from the blood stream under mild radiation. Under these circumstances is it not remarkable that infected lymphoid masses have not been from the first an obvious point of attack by radiation?

Murphy, Witherbee, Craig, Hussey and Sturm, of the Rockefeller Institute, made a joint study of a series of cases proving that by exposure to the x-ray they could not only diminish the size of the hypertrophied tonsils but that with the atrophy there was a disappearance or lessening of the exudate and a diminution of the bacterial flora which were pathological in character. In a few of their cases there was little, if any, reduction in size and in four cases it was still possible after treatment to express abnormal exudate from crypts. In our series there was one case which failed to respond to x-ray treatment but which became normal under radium. This can probably be explained by the more direct and accurate application of the beta rays to the tonsillar tissue. In a few cases there was a primary swelling of the tonsils and lymphoid masses within the throat followed in a few hours by pronounced shrinking as crypts opened up and free drainage became established. In most of our favorable cases, however, there was no immediate marked reaction to be observed, but after a week or ten days the tonsils appeared smaller and the entire throat began to assume a healthier appearance.

In some instances there was no noticeable change in the size of the tonsil for three or four weeks, after which the reduction in size became markedly progressive. All of our cases had definitely enlarged tonsils. Some have shown

an appreciable atrophy but a number have remained persistently larger than normal. Even in these less favorable cases, however, the mucous membrane of the throat loses its dark red angry appearance and assumes a healthy pinkish hue.

It may serve our purpose best to briefly review a few case histories with a description of the throat and general condition before and after treatment. Most of the clinical notes were made by Dr. Lane and copied from her case records.

Carl F., aged 8, was first treated on January 18, 1922. He had a discharging ear which had persisted for some weeks. Fair nasal space. The left tonsil was large and dark red, with a deep depression in the center. There was some cheesy material in the crypts, while the pillars were red and inflamed. Surfaces were ragged in appearance. The right tonsil was a little smaller, ragged and covered with exudate. Cervical glands enlarged on both sides. He had had several attacks of tonsillitis. Culture from the crypts showed a long chain streptococcus. Following the first treatment there was some swelling and sore throat which persisted twenty-four hours. One week later the tonsils appeared non-inflamed, cleaner, and with much less redness of the pillars. Both tonsils were smaller. On March 29th the cervical glands were not palpable and the right tonsil at the pillar line was not red. The left one was still enlarged and slightly red. July 1st there was a slight ear discharge, no colds for five months. Tonsils smaller. September 15, 1922, no cervical glands, tonsils just outside pillar line. Cultures negative. Weight 49.5 pounds. General color and appearance excellent. No further ear discharge.

Verne D., aged 13, was first treated January 3, 1922. He had an enlarged thyroid. The right tonsil was large, ragged and full of cheesy material and the lower part was a dark livid red. Left tonsil slightly smaller, very red, with cheesy mass in center and several large crypts. There was a large vessel extending from the superior pole downward towards the center. Both pillars were inflamed and there were three adenoid-like follicles in the pharynx. Culture by Dr. Grave gave nearly pure Gram-negative diplococci with a few Gram-positive diplococci. Negative for streptococci. After four treatments the neck was 1.25 inches smaller in size and there were no follicles noted on the pharynx. The large vessel on the left tonsil had disappeared. The tonsils were within the pillar line and not red.

Roy D., aged 15. Right tonsil was very large, ragged and red, and contained deep crypts. Right anterior pillar presented a red inflamed area and some pus was expressed from the crypts. Very large sublingual glands. Culture by Dr. Grave gave a Gram-positive diplococcus predominating. Four treatments in January, 1922. On February 8, 1922, both tonsils were well within the pillar line and there was no inflammation in the pillars. Tonsils no longer ragged and the color good. No culture obtained.

Irving D., aged 9. Patient complains of continuous sore throat and earache. The tonsils are large, the left one touching the uvula. Tonsils not red or inflamed but of the soft mushy type. Several deep crypts but no pus expressed on pressure. A few adenoids and slight enlargement of the cervical gland. Good nasal space. Treatment

began December 18, 1921. On February 6, 1922, Dr. Lane reports headache improved, no cervical enlargement, right tonsil just outside the pillar line. Left tonsil little less than half distance to uvula. Ten mm. radium needle was then inserted into each tonsil and allowed to remain two hours. On September 9th tonsils are both within the pillar line, all symptoms have disappeared, and patient has gained in weight. Dr. Grave reports cultures negative.

Victor B., aged 8. Tonsils very large approaching uvula. Not inflamed. Deep crypts but no pus. Cervical glands slightly enlarged. Culture by Dr. Grave shows short chain streptococci. February 21, 1922, has had four treatments. Mother reports that child feels and acts better. Tonsils much smaller. Cervical adenitis improved.

Edith S., aged 5. Weight 30½ pounds. Earache on the left side with history of previous discharge. Tonsils are large and ragged, some adenoids, cervical glands large. She was given two treatments on July 28th and August 8th. On September 30, 1922, the report is as follows: Gain in weight, three pounds. Anemia improved, tonsil just outside pillar line, smooth and of good color. Father reports improvement in every way. Weight, 34 pounds.

Bessie B., aged 8. Has had torticollis on left side for about two weeks. The left tonsil is considerably larger than the right; both outside the pillar line; inflamed, very red, with deep crypts; the cervical glands are enlarged. After first treatment there was a marked swelling of all the glands, which, however, disappeared in about twenty-four hours. However, for this reason, patient did not return for further treatment. Mother reported that the torticollis disappeared and the child showed marked improvement.

One other case is perhaps worthy of report because it is of longer standing than any of these here reported:

Madaline A. was referred to me on August 9, 1918, for chronic cervical adenitis. The tonsils were large but no special consideration was given to that fact at the time. Following the first treatment there was very marked enlargement of the glands and the tonsils became so swollen as to interfere temporarily with deglutition. The following day there was marked improvement and within three days the glands of the neck had practically disappeared. She was given an additional treatment a month later but at this time the tonsils were retracted behind the pillars and there were no glands to be palpated in the neck. Since that time she has had no symptoms and the throat has remained in a healthy condition.

The writer's impressions based upon the observation of this series of cases may be summarized as follows:

Radiation has much to offer in the treatment of selected cases. The type which responds best is that characterized by large tonsils with deep crypts filled with exudate and with marked overgrowth of lymphoid follicles in the throat. The subacute cases, complicated by cervical adenitis usually respond promptly to radiation.

Radium has a certain advantage over the x-rays in the greater accuracy with which measured doses of beta rays may be applied directly to the tissue of the throat.

End results probably cannot be determined until a year or more has elapsed after treatment. Doubtless the retrogression of lymphoid tissue hypertrophy will continue for several months after treatment is suspended.

ESSENTIALS IN THE TREATMENT OF PERITONITIS*

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In any consideration of peritonitis perhaps the most important single item is the question of drainage. It has been stated by competent authorities that complete drainage of the peritoneal cavity is impossible. The author is not prepared to dispute this view, but is firmly convinced that satisfactory results may be obtained in practically all cases if certain anatomical features of the region are kept in mind. To review the salient features, it will be recalled that the various mesenteries form membranous dividing walls which separate the abdominal cavity into several quite definite regions. Small contaminations of any of these divisions may become walled off and absorbed without special attention, but massive infections require drainage.

The stomach has no posterior mesentery, but is supported by the two omenta (Fig. II). The mesentery of the small intestine begins in the upper left abdomen at the point of emergence of the duodenum from its retroperitoneal position and travels obliquely downward to a point opposite the right sacro-iliac joint (Fig. I). It continues upward as the mesocolon, turns left at the hepatic flexure and fuses over the surface of the colon with the great omentum (Fig. II). It turns downward at the splenic flexure, which direction it maintains through the sigmoid to the rectum (Fig. I). At the flexures (Fig. I, A, B, C), the mesentery either becomes very short or totally disappears, leaving the colon a partly or entirely retroperitoneal organ. The areas which result from division of the peritoneal cavity by the mesenteries form natural paths for the extension of inflammation and the mesenteries themselves are both guides and barriers.

A large majority of cases of peritonitis are of appendiceal origin. Due to the dependent and sometimes retrocecal position of the appendix the inflammation, if an abscess is not formed, is usually confined to the lower abdomen. This includes:

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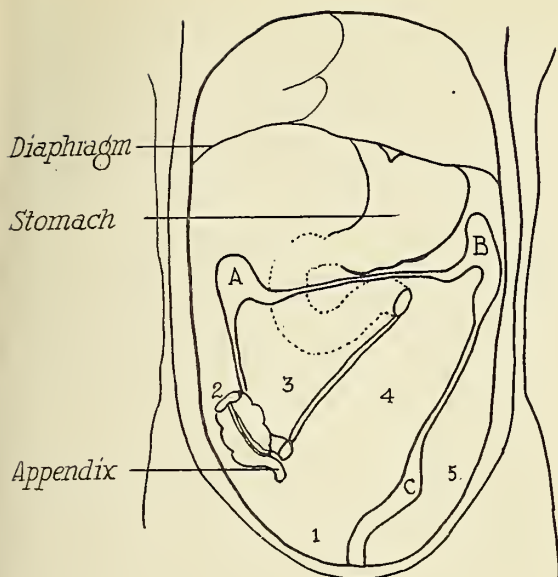


Fig. I. Semidiagrammatic view of posterior mesenteric attachments, liver, greater and lesser omentums omitted. (After Piersol.)

(1) the immediate vicinity of the cecum; (2) the pelvis (Fig. I, 1); (3) the right kidney fossa (Fig. I, 2); and (4) the space between the descending mesocolon and the mesentery of the small bowel (Fig. I, 4). The middle peritoneal fossa (Fig. I, 3), particularly if covered by omentum, escapes in all but the most severe cases and with it the region to the left of the descending colon (Fig. I, 5). If infected they must be drained. If not, drainage must be supplied to: (1) the pelvis; (2) appendix and right kidney fossa; and (3) the intermesenteric region—this last, if preferred, through a stab drain in the left flank. These three are sufficient in all but a very small percentage of cases of appendiceal peritonitis. Stab wounds, gunshot wounds and the perforation of typhoid ulcers may flood the entire region including the middle peritoneal fossa and left kidney fossa and perhaps infect the upper abdomen. They should be drained accordingly.

The upper abdomen presents a slightly different problem largely because of the stomach and its attached omenta. Perforation of posterior duodenal ulcers may infect the retroperitoneal tissue and will not be considered in this paper. Posterior gastric ulcers which perforate, usually infect only the lesser peritoneal cavity, which is best drained through the great omentum (Fig. II). Anterior gastric and duodenal ulcers, if chronic, usually cause only a localized abscess on perforation; if

acute, they may give rise to widespread infection. Acute peritonitis from an empty stomach will be confined to a peripheral location until the borders of the great omentum are passed and at times they are not. In perforation of a full stomach these limits will almost certainly be exceeded and the whole abdomen except the lesser sac flooded.

Peritonitis arising from the pelvic organs of the female, if of a mild nature such as the gonococcus frequently causes, may be drained per vaginam when drainage is necessary. The more severe types, such as occur in streptococcus infection, may respond to no form of treatment nor type of drainage and the mortality is high. Such is the course of streptococcus peritonitis in general. Pneumococcus infection of the peritoneum frequently comes with the septicemia of early pneumonia, but rarely requires operation and is of secondary importance to the pulmonary condition.

Turning from the anatomical side, one is confronted by problems arising from the altered physiology involved and the still unanswered question of the nature of immunity.

Infection is, among other things, a quantitative affair and with bacterial virulence and tissue resistance the same a widespread inflammation will surely prove more severe than a limited one. Consequently, in peritoneal infection prompt localization is demanded and intestinal immobility is of prime importance to prevent extension. Anything

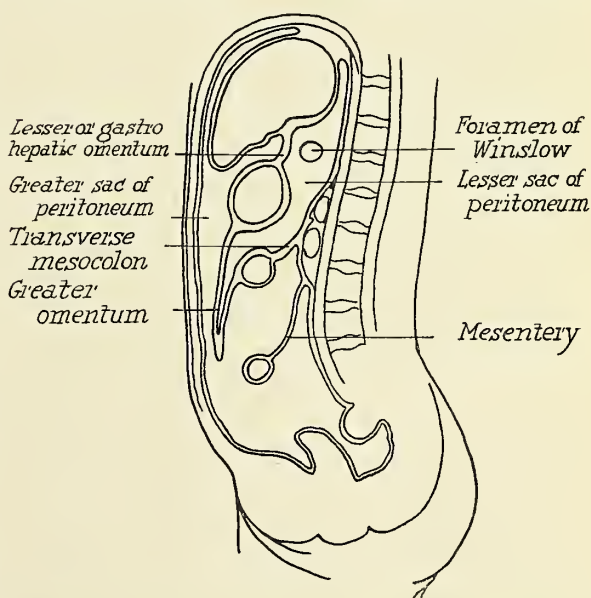


Fig. II. Sagittal section view of mesenteric attachments. Semidiagrammatic. (After Piersol.)

else threatens a fatal increase in the area of infection or at least the formation of pockets and residual abscesses with delayed recovery. Food is the great stimulus to peristalsis and if Ochsner's plan of starvation is followed during the few days when the issue is in doubt there is much less danger of tearing protective adhesions or of spreading the infecting organisms by movements of the gut. It should be further recognized that the administration of cathartics or pituitrin at this stage may overcome the best efforts to quiet the gut and they should be withheld until convalescence is well established. Enemas, on the contrary, if judiciously used, may be given without apparent ill effect after the first twenty-four hours. At the same time, morphine should be given at frequent intervals, not only for its value as an intestinal sedative, but also for the comfort and relief from pain which the patient derives.

A further measure of value in promoting comfort is found in abdominal applications, either hot or cold. Singularly enough, vascular dilatation follows either; at once in the case of heat and after a preliminary vaso-constriction in the case of cold. This vascular dilatation furnishes an increased blood supply, more antibodies and helps to localize the infection. The analgesic properties of both heat and cold are too well known to require further discussion.

The position occupied by the patient is of some moment and should have a few words devoted to it. Custom dictates the semi-erect Fowler's position, which facilitates gravitation of pus to the lower abdomen and minimizes the danger of extension of the inflammation to the less resistant upper abdominal peritoneum.

A further requirement of the patient with peritonitis and one of vital importance is a large supply of fresh water. Authorities^{1, 2, 3} have long recognized the value of water, but have confined the reasons advanced to those of a very general nature. Recent experimental work has thrown some light on the nature of the pathologic process and with it the method of action of water. In 1919, Woodyatt⁴ and his associates reported on the production of experimental fever following dehydration and discussed, from a theoretical standpoint, the bearing of their results on the question of bacterial fevers. It has since been shown that exhaustion of the available body-water results in increased protein

metabolism; a protein fever following in the wake of dehydration^{5, 6} and since elimination is impossible in the absence of a fluid vehicle the end products—the so-called non-protein blood nitrogen—may in a few hours reach a concentration not to be told from that of uremia—yet nephritis plays no part in the process.

There are, in many bacterial diseases, certain alterations in the way the tissues handle water which are worthy of note. In the common circumscribed, superficial infections there is always a surrounding zone of edema or water retention which extends much beyond the area of actual bacterial invasion. Typical croupous pneumonia shows the same phenomenon in a generalized form and may, in the acute stage, retain a number of liters of water which is rapidly released through the skin and kidneys when the crisis is reached. Careful measurement of fluid intake and output in cases of peritonitis which recover will show a similar but less abrupt loss and recovery of normal water balance. This retention apparently results from some change in the state of colloidal combination in which the water is held and gives visible evidence that the body has use for abnormally large quantities of fluid in these diseases. The change is seemingly equivalent to actual withdrawal of water from the body and there occur increased protein wastage, fever and leukocytosis^{5, 6}, all of which may be reproduced by experimental dehydration. Many pneumonia and peritonitis cases show, in addition, sharp increases of non-protein nitrogen^{7, 8} in the blood. This, when present, indicates acute and urgent need of water. Added evidence of water shortage may be seen in the dry skin, scant urine and parched tongue.

Water must be granted a place in the scheme of immunity to infection insofar as it compensates for the change in fluid requirements and should be given to the patient with peritonitis in large amounts—never less than 4000 c.c. and at times 6000 c.c. or more daily. As to the route of administration, it is best given through the skin, either interstitially or intravenously, according to the preference of the surgeon. If, at times, a failing circulation is unable to absorb interstitial saline, the intravenous route becomes imperative. Water by mouth should not be given in the uncontrolled stage of the disease, as it may cause undesirable peristalsis and the uncertain absorption with occa-

sional vomiting render difficult a precise knowledge of the amount given. If the rectum is used, tap water which is hypotonic to the body fluids is probably more easily absorbed than the isotonic saline or the hypertonic solutions of glucose and soda which are given to combat an acidosis the importance of which probably looms larger in fancy than in fact. These last, one fermentable and the other readily evolving carbon dioxide, give the impression that, at times, they actually increase the suffering and distension of the patient. Even in the rectum the absorption of fluid is much less satisfactory than when it is introduced through the skin.

A majority of cases of peritonitis should do well on the treatment outlined. There remain that obstinate few where improvement does not come and where abdominal distension becomes progressively greater, all signs of intestinal activity, even the passage of flatus, vanish and the condition becomes indistinguishable from an intestinal obstruction. In such cases the intestines are found to contain much gas, the accumulated results of bacterial action, and in addition there may be large quantities of fluid which distort the gut, dragging it into the pelvis and giving rise to multiple obstructive angulations. The purely gaseous distension, while inconvenient and uncomfortable, is apparently less menacing to the patient than the mixed type and when distension and obstructive symptoms become really alarming there is almost invariably a large fluid content in the bowel. This fluid may arise from any or all of several sources: (1) it may be due to unabsorbed water taken by mouth; (2) it may represent the gastric, biliary and pancreatic secretions; (3) it may come from a source at present very imperfectly understood and of which the author's account is by no means complete. To resume, there exists in the mucosa of the small intestine a mechanism for the elimination of waste nitrogen concerning which our present-day knowledge is most painfully meagre. This function is normally inactive and only at times of stress, when there is an increase of nitrogenous waste to be excreted, does it come to the aid of the hard-pressed kidneys and pour water containing the waste into the gut. Thus in nephritis, where kidney efficiency is lowered and blood nitrogen accumulates, a watery diarrhea may offer relief. At such times catharsis seems to furnish stimulation. If the unwary practitioner administers drugs

to check this, without proper investigation, the patient may lapse into uremia. Again, in conditions where water shortage results in increased waste formation and a vehicle for elimination is difficult to secure, the small quantity of available fluid may be passed into the gut and give rise to vomiting or merely remains in situ, adding to the distension and paralysis. In both intestinal obstruction and certain cases of peritonitis, which bear a resemblance, the fluid excreta in the bowel carries nitrogenous waste whose identity with that of the blood may be chemically demonstrated.

This function of the intestinal mucosa gives but short relief of the condition in the blood, as the water reserve is still further reduced in amount and the rate of protein cleavage and formation of end products undergoes rapid increase. Experimental data on the activities of the intestinal function of nitrogen elimination, while yet inadequate, are not entirely wanting and several observers^{5,9} have found nitrogenous waste deposited in the lumen of the bowel under conditions of increased concentration in the blood.

Cushny¹⁰ states that normal human kidneys may continue to function against some twenty atmospheres of osmotic pressure in the urine secreted, with a urea concentration of sixty times that found in the blood. Up to this point renal secretion is adequate to eliminate waste and maintain equilibrium of the blood. As change of water balance becomes more marked, the concentration against which the kidneys must act rises and they soon prove incompetent. When this point is reached the gut mucosa may become functional and, for a period, attempt the elimination of watery refuse which distends and paralyzes the bowel. Alternate periods of inadequate and adequate hydration form a fertile source of such fluid accumulations. There is at first a period of rapid protein catabolism followed by increased waste formation and retention of the same. When a fresh supply of water becomes available elimination will commence and at first by the intestinal path. When the concentration is reduced to that point where renal function is possible, a resumption of the urinary output may be expected.

To forestall fluid distension, which is *prima facie* evidence that there is or has been a shortage of water, sufficient saline must be given not only to minimize protein metabolism but to provide a

diluent for keeping the concentration of the urine at a low point at all times. This permits the kidneys to easily handle the load. Furthermore, all efforts must be used to quickly wall off the infection so that extension and further increase of the water requirements shall not occur, as there are limits to the carrying and distributing powers of the circulation. Observation of a series of cases where maintenance of water balance is given a place of primary importance will convince the most skeptical of the value of what may be called "dilution" therapy in the prevention of fluid distension. These measures do not influence the accumulation of gas and some discomfort may arise from such a source. It is, however, not dangerous in itself and by the judicious use of enemas may be held in check until spontaneous passage commences.

In certain neglected cases, the picture of ileus is already present when the patient comes to operation and the preventative ounce cannot function as such. The curative pound is of questionable value and the outlook is correspondingly gloomy. Enemas may be tried, but are apt to prove futile. If the fluid regurgitates into the stomach it may be periodically withdrawn by a tube, to the great relief of the patient. This measure is at times invaluable and may serve in place of more radical procedures. If it fails, enterostomy is the sole recourse. At times, several openings may be required to drain the fluid and relieve angulations with restoration of functional continuity in the gut. Collins¹¹ very ingeniously drains both large and small bowels through a single tube. The watery exudate must be completely drained and not permitted to descend to the lower intestine for reabsorption, as it is highly toxic. In it are found the nitrogenous waste products from the blood stream which form a part and possibly all of the intestinal toxins of obstruction, although the presence of others cannot now be authoritatively denied and is still a matter of dispute.

SUMMARY

The treatment of peritonitis should include:

1. Drainage in accordance with the focus and extent of infection and based on the anatomic configuration of the peritoneum.
2. Nothing by mouth.
3. Morphine at frequent intervals, but not to

exceed the point where the respirations are reduced to fourteen per minute.

4. Large hot stupes or ice bags applied to the abdomen.

5. Fowler's position.

6. Hypodermoclysis or intravenous injection of 4000 c.c. of saline per twenty-four hours and more if the indications arise.

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DISCUSSION

DR. A. R. COLVIN, St. Paul: Dr. Bacon has covered in a most exhaustive manner, not only the treatment of peritonitis but he has also given us a physiological and pathological basis upon which treatment should be founded. Upon this basis he has outlined treatment, the detail character of which emphasizes both its medical and surgical therapeutic aspects. In doing all this, he carries us into the region of physiological chemistry, which occupies so much of modern medical thought.

It is interesting in this connection to note how therapeutic measures at first founded upon clinical necessity are later rationalized, by, as it were, a more scientific explanation.

Peritonitis must be looked upon as acute sepsis plus the effect of acute inflammation of the underlying organs, which the peritoneum invests. We see patients with the most profound and widespread infections, not originating in the abdomen, recover in a longer or shorter time. In

peritonitis of a diffuse or general character the patient has to contend with the shock of great pain, the absorption of septic material from an absorbing surface almost as large as the skin, and paralysis of the intestine with the absorption of its consequent toxic contents.

Patients with acute sepsis from any source exhibit great thirst, and it is easily understood how, when the other factors of intestinal toxemia and the loss of water into the intestine are added, the thirst becomes intensified.

Dr. Bacon has given us a rationalized explanation for this thirst and its treatment. I have just said that profound sepsis may be recovered from and so may inflammation of the peritoneum.

We are all aware of the tremendous number of cases of localized peritonitis with encapsulated pus that recover. It was early a great wonder to me to see cases of most diffuse peritonitis, as demonstrated at the operating table, recover. It was later a great surprise to see some cases where all the symptoms and signs of general or, if you like, diffuse peritonitis were present, recover without operation. I have seen peritonitis of a diffuse character following gangrene of the intestinal wall with perforation due to Littre's hernia recovered from in the sense that all abdominal symptoms disappeared, the functions of the gastro-intestinal tract being restored, and yet the patient died of pyemia.

It is not so very uncommon for the surgeon to open multiple localized collections of pus, situated between coils of intestine or elsewhere in the abdominal cavity, quite remote from the main depot of infection and inflammation, and have their patients recover. These different observations but repeat the old observation of the infinite variety of reactions of the organism and its tissues, to the infinite variety and degrees of infection. With these observations in mind, it seems that our attitude should be one of optimism for the great majority of peritoneal infections.

By camping on the trail of these infections and keeping up a running combat we may easily save the day. Even in the most desperate cases, where intestinal paralysis seems to crush the last hope, enterostomy may help. It may not be amiss in speaking of treatment to include prophylaxis; perhaps it requires a really large experience to fully and truly realize the real significance of early operation, considered as a prophylactic measure.

The judgment as to how far to go and when to stop in the peritoneal cavity, means knowledge, judgment and the training of temperament.

Dr. R. E. FARR, Minneapolis: The physiological side of the subject has been brought up by the essayist, and I put me in mind of Dr. Carlson's statement made last night that filling the upper part of the intestinal tract causes a quiescence on part of the muscles. He did not go any further than the stomach, as I remember, but he touched distinctly upon the action of the latter. If this effect continues down the intestinal tract it would upset our former ideas with relation to keeping the intestinal tract empty. The toxins are high up in the intestinal tract, and when we do an enterostomy it should be made as high as possible. McKenna and others have called attention to that fact.

We all have our ideas in relation to the treatment of peritonitis. I believe the methods brought out by Alonzo

Clark and Ochsner, and now being revived, are important. All of these cases of advanced peritonitis are neglected cases, and that is what we are talking about. The thing that kills is a rather late condition.

From the general side of the treatment we should give water, as the doctor says, and it is surprising in how many of these cases 1000 or 2000 c.c. are insufficient. I believe 4000 c.c. should be the lowest limit for twenty-four hours, and it should be given in a comfortable way, as suggested by Willard Bartlett, giving one-sixteenth of one per cent novocain in the solution.

The handling of the local condition is important in the treatment of localized peritonitis. I believe the most important things are these: In the first place the patient should be most carefully handled from the time he leaves his bed, or while he is in bed, until the operation is performed. We have records in our practice of six cases in which rupture of intra-peritoneal abscess has taken place during the trip to the operating room or while taking general anesthesia. In the second place, operation should be so performed as to limit the infection to the position in which it already exists when we begin to operate. In the third place, we should limit the infection to that region afterward, if possible. We may accomplish this best by packing off, emptying the abscess by suction rather than by sponging, introducing drainage, withdrawing the packs, fastening, if possible, the omentum to protect the general peritoneal cavity, and then preventing postoperative physical motion on part of the patient, and, above all, post-operative vomiting, which forces the small intestine and omentum in and out of the abscess cavity and spreads infection. This, of course, you can readily realize is best done under local anesthesia.

DR. A. E. BENJAMIN, Minneapolis: I desire to subscribe to everything that has been said this morning on this subject, but as to the position of the patient I might take exception, in some instances. The Fowler position does not drain some of these patients. I turn some of them over on the face, and it is surprising how they can accommodate themselves to this position and how quickly the abscess drains.

We must give up the term of general peritonitis. Diffuse peritonitis is a term which should be used in most cases. In turning these patients over on the face I have found, where the appendix had ruptured near the gut and sloughed off, and in which also enteroliths had broken through the wall of the appendix, these enteroliths frequently escaped through the abdominal wound.

The use of gauze within the abdomen should be given up in many instances, as it injures the peritoneum and promotes adhesions. I usually employ a rubber dam to pack off the intestines.

DR. ARTHUR N. COLLINS, Duluth: I do not think a discussion on this subject is complete without placing emphasis on the fact that if we are going to give fluid we might as well begin as soon as possible, and the more fluids we can give before the operation the better. The points made by Dr. Bacon and Dr. Farr are well taken. Everything should be done with the utmost gentleness and speed, and Murphy's admonition of getting in and getting out quickly is good.

THE DIAGNOSIS OF CANCER OF THE UTERUS*

OLIVER C. MELSON, M.D.

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Rochester, Minnesota

It is not my purpose to discuss the details of the signs and symptoms of uterine malignancy, but rather to present some of the early signs and symptoms which may aid in earlier diagnosis, and to emphasize the importance of making an early diagnosis. It has been estimated that the prevalence of cancer of the uterus is increasing at the rate of about 2.5 per cent each year. The latest report of the Census Bureau contains the information that about 24 per cent of deaths among women during the year were from cancer of the uterus. Bland has made the statement that in the last forty years the mortality from cancer has doubled. Cancer of the cervix is more common than cancer of the uterus; also, it is relatively more malignant and grows more rapidly, and for this reason the two conditions should be considered as separate entities.

That the treatment of cancer of the cervix is unsatisfactory is shown by the numerous methods of treatment employed. Surgery is generally admitted to offer the best chance for cure. However, less than 50 per cent of such patients come to the Mayo Clinic while the disease is in the operable stage. Ross, in a recent study, found that, depending on the type of operation, from 16 to 30 per cent of patients operated on were alive after five years. Frankl traced twelve patients operated on for early cancer of the cervix and found that eight were living at the end of five years. The operable cases in the series observed in the Mayo Clinic were sixty-four (56+ per cent) in 1917; sixty-four (45+ per cent) in 1918; forty-nine (32.9 per cent) in 1919; thirty-seven (23+ per cent) in 1920, and thirty-two (24+ per cent) in 1921. The percentages show more accurately the true status of early cases. Contrasted with these data the data from cases of cancer of the fundus of the uterus for the corresponding years are: thirty-two (44+ per cent) in 1917; thirty (43+ per cent) in 1918; fifty (49.5 per cent) in 1919; thirty-seven (35+ per cent) in 1920, and forty (47.6 per cent) in 1921.

I have analyzed these cases of cancer of the cervix and fundus of the uterus with respect to the duration of symptoms, the primary symptoms, the lapse of time between the onset of symptoms and consultation with a physician, the primary diagnosis and treatment, and the condition found when the patient was first examined at the Mayo Clinic.

EARLY SYMPTOMS AND DURATION OF SYMPTOMS

Cancer of the uterus, like cancer in other organs, begins insidiously. A vaginal discharge, more profuse than normal or changing from mucoid to watery, may be the primary symptom. Often sudden severe hemorrhage is the first sign of the disease. In women of the child-bearing period, a prolongation of the period or frequency of the menstrual flow may mark the onset of a malignant condition of the uterus. In the present series the primary symptoms in order of frequency were: bloody discharge, watery leukorrhea, hemorrhage, intermenstrual spotting, profuse leukorrhea, frequent and prolonged menstrual periods, profuse menstrual periods, pelvic or low abdominal pain, and bleeding after intercourse. Cancer of the uterus occurs so commonly after the menopause that the accompanying bloody discharge is often mistaken for a return of the menstrual flow.

As the disease progresses, the well-known symptoms of foul, watery, pinkish discharge with frequent and often continuous and severe bleeding and pelvic pain ensue. Unfortunately it is in this stage, when chance for permanent cure is usually passed, that the greater number of patients come for examination. This is particularly true in cases of cancer of the cervix. The average duration of symptoms in these cases, before the patient came to the Clinic, was eleven months. The shortest time was eleven days and the longest, six years. In the operable cases, the longest duration of symptoms was twenty-five months and the shortest, three weeks. In the inoperable cases, the shortest duration of symptoms was eleven days. In the cases of cancer of the fundus, symptoms had been present on an average of seventeen and nine-tenths months before the patient came to the Clinic. Twelve years was the longest duration and five days the shortest.

Unfortunately the duration of the symptoms and the extent of the disease do not always run parallel. In an early case, from the standpoint of operability, the symptoms may be protracted, while conversely,

*Read before the Minnesota State Medical Association, Minneapolis, October, 1922.

in an advanced case the symptoms may have existed for a short time only, particularly in cancer of the infiltrating rather than ulcerating type, that originates within the cervical canal. Symptoms are manifest in the incipient stage of cancer of the fundus of the uterus, and because the malignancy is confined to the uterus for a considerable period, operation may be advisable even if symptoms have been present for a comparatively long time.

That the laity do not recognize the importance of the early symptoms of cancer is shown by the time interval between the onset of symptoms and the first consultation with a physician. In the cases of cancer of the cervix, the average interval was seven months; the shortest was one week and the longest two years and ten months. In the cases of cancer of the fundus of the uterus, the average interval was six and four-tenths months; the shortest was five days, and the longest, two years. In the latter cases good results are obtained by surgical procedures even after such delay, but the former are usually beyond surgical aid.

PHYSICAL FINDINGS

The importance of a thorough physical examination cannot be emphasized too strongly; it should not only be digital but visual. The educated finger may be more valuable than the eye in most cases, but by using both, mistakes may be reduced to a minimum. It may be necessary to make two or three examinations within a few days before a definite conclusion is reached, but the repetition of examinations over a period of months is to be deplored.

Since the majority of patients with cancer of the uterus have borne children, lacerations of the cervix are common. The mucous membrane around the external os may be eroded and the lips everted. In the earliest stages of the malignant disease it is confined to a small area. The epithelial proliferation and the subsequent fibrosis produce increased firmness of the cervix, and it is these areas which should be searched for with the examining finger. Slight bleeding may be produced in the examination of such nodules and the surfaces may have a granular "feel"; these points are also of diagnostic importance. Often it is possible to see into the cervical canal during the visual examination and any suspicious appearing areas may be palpated by means of a cotton-tipped applicator.

Physical examination may not produce important evidence in cases of cancer of the fundus of

the uterus. In most cases the fundus is enlarged and there may be tenderness. The chief value of the examination is in the exclusion of cancer of the cervix. Cervical polypi are sometimes associated with a malignant growth higher in the canal and the investigation should not stop with the finding of polypi. By means of the speculum, blood may be seen coming from the cervical canal.

MICROSCOPIC EXAMINATION

If a diagnosis cannot be reached, clinically, in two or three days, material for microscopic examination should be obtained. If the examiner has satisfied himself that there is an indurated area, characteristically granular, and if there is a history of a vaginal discharge of unusual amount or character, a specimen of tissue should be removed by an experienced surgeon and examined by an experienced pathologist. The specimen should be taken and the examination made with the patient prepared for operation, so that, in case of malignancy, radical procedures may be carried out without delay. In cases with presumptive symptoms of cancer of the fundus, a diagnostic curettage should be performed and the tissue examined under like conditions. Jameson recently reviewed a series of eighty-three cases of suspected cancer of the fundus in which diagnostic curettage had been performed and malignancy was found in all. Three cases had been reported negative, and the patients had returned within one year with definite findings of cancer of the uterus.

In most of the cases in the series the patients had delayed consulting a physician and malignancy was found at the primary examination. Some patients, however, had been under observation by physicians and had received local treatments, such as caustics, douches, and tamponage, for several months. Because of the difficulty often experienced in distinguishing between simple erosion and early malignancy, local treatments should not be too long continued.

Any real advance in the treatment of uterine cancer must come through the medium of early diagnosis, since statistics show that in treated cases cure is the rule and recurrence the exception. If the efficiency in the diagnosis of cancer of the uterus is to improve, attention must be focused on the early subjective symptoms and physical signs. Closer attention must be paid to irregularities of the menstrual flow and increased vaginal discharge of any character, particularly during the meno-

pause. Cancer propaganda must be spread among the laity. Finally, the patient must be given a thorough pelvic examination when she first seeks relief and not be dismissed with the diagnosis of "merely the change of life."

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DISCUSSION ON PAPER OF DR. O. C. MELSON

DR. R. D. MUSSEY, Rochester: We learn that the incidence of cancer is increasing. Whether this is due to the fact that prophylactic health measures in infancy and childhood are resulting in more people living to the cancer age, or whether a relatively larger proportion of people have cancer, is a question. Dr. Melson's paper is a timely one because we know that many women who reach the menopause develop cancer, and that the treatment of cancer of the cervix and uterus will be followed by the best results, if the condition is recognized early.

There are two points to be emphasized. One is in regard to the history of increased menstrual flow. Undoubtedly a careful questioning of the patient will often bring out points in regard to the menses which are of great value. Often women who consult a physician for some other reason may have an irregularity of the menstrual flow which

is the only symptom of a condition which, if not cancer at the time, may develop into cancer. This point can not be too strongly emphasized.

Dr. Melson has shown very clearly that the early treatment of cancer of the cervix will be followed by much better results than treatment which is carried on when the condition is far advanced. In many cases, early cancer of the cervix can only be diagnosed by the microscopic method. Of course, we can often make the diagnosis by history and digital examination that the ulcer which is present is a carcinoma, but I do not believe that the question of taking a scraping of the uterus or a section of the ulcer on the cervix for microscopic examination can be too highly emphasized. Moreover, in those cases in which we suspect the condition may be carcinoma, we should be prepared to go ahead at the time the specimen is taken with whatever treatment may be necessary.

I want to emphasize two points again: (1) care in taking a detailed history, and (2) in doubtful cases, the early use of the curette to obtain tissue for microscopic examination so that a proper diagnosis may be made before the condition has become far advanced.

DR. O. C. MELSON, Rochester (closing): I called attention to the fact that the operable cases had decreased in number during the past five years. Whether this is due to an actual decrease in the early cases in which examination was made is questionable. Opinions with regard to operability are changing. That is, more patients are being treated by radium than by operation. As a curative factor radium is apparently more disappointing than operation. The radical removal of the disease is the end to be desired.

In three cases of malignancy of the body of the uterus, diagnostic curettage was negative. With a definite history of cancer, therefore, hysterectomy should not be postponed in spite of negative findings from the diagnostic curettage.

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EDITORIAL

Intoxicating Official Preparations

The Volstead law has a bearing not only on the alcoholic preparations commonly used as beverages, but affects the dispensing of certain official preparations ordinarily not thought of as capable of producing that much sought after "kick." Occasionally misunderstanding between physicians and druggists on this subject is the cause of friction and druggists are personally blamed by the profession for a state of affairs for which they are not at all responsible. Druggists are held responsible by the federal authorities for the manner in which they dispense alcoholic preparations and as long as we have a federal law which is specific in regard to these preparations law-abiding propensities on the part of druggists should not be discouraged by the attitude of the profession. The tabulated alcoholic preparations are for the most part merely vehicles and there is little occasion to prescribe them otherwise. Calling attention to these facts should be all that is necessary to clear up the situation.

Prescriptions calling for the following designated preparations, not in combination with other medicaments, can only be legally written by physicians holding permits to prescribe intoxicating liquors. Such prescriptions must be written upon the official prescription blank, known as Form 1403, and the pharmacist dispensing any of these preparations in this way must have paid the \$25 annual license as retail liquor dealer.

The complete list of official preparations, held at this time by the prohibition authorities to be intoxicating beverages, is as follows:

Cordiale Rubi Fructus.
Elixir Anisi.
Elixir Aromaticum.
Elixir Aromaticum Rubrum.
Elixir Aurantii Amari.
Elixir Cardamomi Compositum.
Elixir Glycyrrhizae.
Elixir Glycyrrhizae Aromatica.
Elixir Taraxiei Composita.
Elixir Terpini Hydratis.
Spiritus Aetheris.
Spiritus Juniper Compositus.
Spiritus Myrciae Compositus.
Tinctura Amara.
Tinctura Aromatica.
Tinctura Caramellis.
Tinctura Cardamomi Composita.
Tinctura Lavandulae Compositae.
Tinctura Zingiberis.
Vinum Aurantii Compositum.
Vinum Carnis.
Vinum Pepsini.
Vinum Pruni Virginianae.

A retail pharmacist may make any or all of the preparations listed above. He may keep them in stock and use them in compounding prescriptions or in making other preparations or compounds without incurring liability as a retail liquor dealer, provided the finished product is rendered unfit for beverage use before being dispensed, and in this connection it should be borne in mind that the responsibility respecting the unfitness of the finished product for beverage use rests entirely upon the dispenser, whether the preparation be dispensed upon prescription or otherwise.

Physicians who do not hold permits to prescribe intoxicating liquor and who may desire to prescribe any of the above preparations should take pains to add to their prescriptions sufficient additional

medicament so that the finished prescriptions will be unfit for beverage use.

If the foregoing facts are kept clearly in mind physicians may prescribe any of these twenty-three preparations without fear of disastrous consequences. Pharmacists are not permitted to fill prescriptions which are not written in compliance with the law.

Vaccines

MINNESOTA MEDICINE has been asked by the Sherman Laboratory to make fitting answer to a popular article appearing in Hearst's International Magazine for December. The article in question is one of a series by Paul DeKruif, Ph.D., and names specifically certain makers of stock vaccines. Sherman should take some consolation from the fact that Parke-Davis are named among the other conspirators, and their offspring, Phylacogen, is dug up from its resting place for another post-mortem on the ill-fated remains.

This is not the time nor place to rise either to an approbation of Hearst's magazine, or a condemnation of Sherman and his ilk. These popular articles are certainly an awful reflection on the reasoning powers of the average physician, who buys blindly of healing products purveyed to him through the established agencies of advertising and salesmanship. About the only voice that can be raised in his defense is the philosophical reflection that the purchaser of a motor car doesn't thereby prove that he believes everything in the literature that either preceded the car or came with it. The trouble comes from unreasonable and unwarranted advertising.

Few people seem to appreciate the elemental antagonism that properly minded doctors have toward advertising as a whole: the quacks all depend on it; speculative investment schemes (with a large score of hits from long range firing among doctors) put over their promises by advertising and salesmanship; patent medicine venders, through publicity, became real, "honest to goodness" astrologers, and actually did convert brass into gold; our most cherished traditions rightly hold absolutely against allowing any relaxation of our ethics regarding group or individual advertising.

Nevertheless, those who admittedly manufacture legitimate pharmaceuticals repeatedly allow themselves to be led into advertising methods that they must know will only antagonize the intelligent doc-

tor and stimulate the cupidity of the man who accepts therapeutic panaceas. The vaccine mixers are no worse than many others, except that they have capitalized the doctors' present blind belief in anything that comes out of a bacteriological laboratory. No one can find any particular fault with DeKruif's article—he expresses the average sane doctor's attitude toward vaccine, even though he is unversed in actual therapeutics, and signs himself as a Doctor of Philosophy.

Sherman probably resents the accusation that his vaccines are "fakes." Theoretically, that might involve a criticism of their physical properties or the therapeutic purposes for which they are designed. Much greater agreement will be found in discussing the latter than the former phase. Some good physicians believe in vaccines; others are unwilling to condemn them all unequivocally; a great many see in them only foreign protein substances that, aside from a few specific exceptions, yield a common allergic response. Regarding the system of therapeutics and the cataloguing of diseases for which numbered vaccines are specific, there can be no disagreement: this represents the same legalized quackery as has an exact counterpart in the polyglot mixtures of gland extracts and intravenous medicaments. From the two extremes of our great country comes presently a flood of medical advertising literature: the West gives us a hormone feast, designed to meet any disease exigency; the East, a flood of ampules, the contents of which can be "safely introduced by anyone with a very little experience." In fact, the obliging "Intravenous Companies" have been known to send around trained nurses to remain long enough in certain doctors' offices to "teach them the method." The whole commercial enterprise can only arouse our great disgust. Think of any company, having any presumption to scientific accuracy, advising the routine administration of fifteen grains of iodid intravenously for goiter!

There are numerous commercial pharmaceutical houses that have refused to stoop to such procedures, and they should be encouraged. The American Medical Association should be backed up. It is conceivable that they may at times make errors in judgment in this very difficult task of standardization, but there is absolutely no question of where we should stand. MINNESOTA MEDICINE is wholeheartedly back of their own and allied propaganda for reform.

E. L. T.

Some Data on the Alleged Lack of Physicians and Increase of Irregular Practitioners

It is frequently asserted that the rise of osteopathy and chiropractic is due to a shortage of physicians; that these irregular and poorly educated practitioners are taking places in the country that should be filled by regular doctors; that chiropractors and osteopaths are being made health officers in country towns because no regular physicians are available. I do not believe that these statements are true. I think, moreover, that their reiteration tends to do harm by creating the impression that there is a shortage of doctors. Consequently there is a tendency to burden the schools with an excess of students and lower the standard of instruction.

During the last two years a careful study has been made of all requests for doctors or information in regard to locations that have come to my office. We ask each informant to fill out a blank giving name of place, population, railroad connections, character of country, condition of roads, nearness of physicians, etc.

The inquiries as a rule fall into two classes. The first are towns of 200 to 700 people, in well settled counties, with doctors within five to twelve miles. Some of these places formerly had doctors. Some never had a physician. It is evident in most cases that (a) the people are already reasonably well cared for by the doctors in the neighborhood, and (b) that it would be doubtful whether another physician in the district could make a living.

The second class consists of a few small, isolated and usually new communities of 300 people or less. There may be no doctors within 25 to 50 miles. There is no doubt that sick people in such communities frequently suffer for lack of medical care. These places could not support a doctor on the fee basis. Some such communities are approaching the matter on a co-operative basis with fixed salary offered, and are getting doctors.

Occasionally we get notice of an opening in a large place (1,000 or over), but always we have found that there is already at least one doctor on the ground.

Recently I canvassed all our replies for the last two years and sent a new questionnaire relative to irregular practitioners. To this inquiry 47 replies were received from small towns of Minnesota, North and South Dakota and Montana.

Thirty towns reported no doctors, no osteopath, no chiropractor. Fifteen towns have a doctor but have no osteopath or chiropractor. Two towns have each one doctor and one chiropractor. All these places are of less than 1,000 population and most of them less than 500.

In not a single place do we find an osteopath or chiropractor serving the people with no regular physician available. This seems to me to settle the contention that the irregulars are filling the alleged need for doctors in small country places.

When we consider larger rural places—towns of 1,000 and over—one practically always finds one or more physicians. Of course, the irregulars are also likely to be found in such towns. The point is that they are *not taking the place* of the doctor, but are *additional to him*.

There are at present in Minnesota three health officers who are osteopaths. These are all in large towns where physicians are located. No chiropractor is a health officer at the present time. A few have been in that position in previous years; but, according to the Executive Secretary of the State Board of Health, they were always in towns where doctors were located.

Comparing the American Medical Directory, edition of 1921, with the list of incorporated places in Minnesota, census of 1920, the following facts appear. Six places of over 1,000 population appear to have no resident doctor. They are Edina, Richfield (both close to Minneapolis in Hennepin County), West St. Paul, North Mankato, South Stillwater and Kinney. All these, however, are suburbs of large cities and have adequate medical services. Indeed in several of these places there are resident doctors, but they have offices in the larger nearby cities and are listed there by the American Medical Association Directory.

Minnesota has 64 towns of 750 to 1,000 population. There doctors in 58 of these towns. The six without doctors are Brooklyn Center, Crystal and Golden Valley (suburbs of Minneapolis), Waite Park (suburb of St. Cloud), and Franklin, St. Louis County.

We conclude that from a practical standpoint there are no places in Minnesota above 750 in population which are without a physician.

Minnesota has 85 villages of 500 to 750 population. There are doctors in 74 of these towns, or 87 per cent.

Minnesota has 202 villages of 250 to 500 population, and there are doctors in 127 of them, or 63 per cent.

The osteopaths and chiropractors go to the larger cities and towns just as the doctors do. They do not go to the small villages where there is no doctor. Whatever reason there may be for the irregulars' existence, it is not to fill vacancies due to a lack of physicians. The people are not, as some say, crying for poorly prepared doctors because they cannot get better ones. There is no need, at least in the Northwest, to lower the standards of medical education or to found more medical colleges or to increase medical school classes beyond the limit of efficient teaching.

E. P. LYON,

Dean of Medical School,
University of Minnesota.

The article by Dr. Michel Zlatovski, recently of Petrograd and now located in Duluth, appears in this number of MINNESOTA MEDICINE. The information contained in this account of the medical conditions in Russia is a first-hand report and therefore the more impressive. After this paper was presented before the St. Louis County Medical Society, such an impression was made upon those present that a committee consisting of Drs. W. Bagley, Arthur Schwartz, and W. A. Coventry was appointed to receive contributions in order that food might be provided for some of our fraternity in Petrograd. A small sum was subscribed at the meeting, but the need among the physicians in Petrograd is so great and pressing that we are hastening to publish this most interesting paper and call the attention of Minnesota physicians to this opportunity to assist their professional brothers in obtaining food. Contributions may be sent to Dr. W. Bagley, 500 Fidelity Building, Duluth, Minnesota, or to any of the other members of this committee.

The following communication has been received from Geneva under date of November, 1922, which further calls attention to the plight of doctors in the Province of Nikolaev, Ukrania:

Dr. Haigh, a member of the Health Committee of the League of Nations, and health expert attached to the Nansen Organization, communicates the following details on the present position of the doctors and health officers in the Province of Nikolaev:

"The assistance given to doctors has so far been negligible, and no organization for their relief exists in the Province. A few doctors who have friends abroad have occasionally received parcels of foodstuffs.

"All goes to show that in the coming winter the famine and conditions of life generally will be still worse than in the past, unless help is sent from abroad.

"The doctors receive their salaries only after long delays. Their tragic position continues to grow worse. During the past winter some supplies were officially distributed to them, but even this relief has now come to an end. The medical staff must meet their necessities as best they can. Very many doctors are only able to subsist by the sale of their furniture, or any objects which they may possess. Even those who have the best practices are in need of clothing. The poorer doctors who live in remote districts have to rely on the help of such peasants who have themselves managed to escape ruin.

"The situation in the Province of Nikolaev gives some idea of the conditions which exist in other parts of the country.

"Without the official ration, which consists of an English pound of maize distributed to a portion of the staff in the hospitals, life would have been impossible in these establishments. This relief has now come to an end. At the present moment a hospital doctor, if he is paid, receives 27 million roubles (in September this was equivalent to £1, but at the present moment it is less than 8 s.) The hospital sisters receive about 20 million roubles, and other members of the staff still less. A great number of persons belonging to the staff of the hospitals have died at their posts."

This picture clearly shows the tragic position of the Russian doctors in the famine districts, and the urgent necessity for providing them with relief.

OBITUARY

DR. ALBERT A. CAMPBELL

Dr. Albert A. Campbell died at his home in Ogema, Minn., Monday, December 18, 1922, after four days' illness from pleurisy, terminating in lobar pneumonia. Dr. Campbell was a graduate pharmacist and had conducted a drug store in various places in St. Paul for about twenty years. He graduated from the Medical Department of the University of Minnesota in 1909 and practiced in St. Paul for seven years, coming to Ogema in 1916, where he had a general practice and specialized in eye, nose and throat work. His death occurred from pneumonia contracted from exposure while riding about the country a few days before his death.

Dr. Campbell was a man of wide activities and of great physical energy, accompanied by great personal interest in his patients. His practice was extensive and covered a large section of both Becker and Mahanomen Counties. His abilities as physician, his kindness and good will as a man,

his interest in public affairs and his wide experience in pharmacy and medicine, made him a leader in the community, and his loss is felt keenly by the community which he served so well. It can be truly said of him that he sacrificed his life in the performance of what he thought his duty. Dr. Campbell was a member of the Alpha Kappa Kappa medical fraternity, was a member of Mahnomen Lodge, A. F. & A. M., and a Royal Arch Mason.

Funeral services were held at Mahnomen Tuesday evening, December 19, and the remains taken to St. Paul for interment.

Dr. Campbell is survived by his wife and two adopted daughters.

DR. J. PALMER JOHNSON

Dr. J. Palmer Johnson, aged 84, formerly a well-known physician in Blooming Prairie and Owatonna, died Saturday, December 9, 1922, at Lynn Haven, Florida, where he had made his home for the past ten years.

Dr. Johnson was born in Windham County, Connecticut, on February 22, 1839, and came from the East among the pioneer settlers who came to settle at St. Charles in 1856. At St. Charles he studied medicine and pharmacy under local druggists and physicians and later attended Rush Medical College at Chicago, graduating in 1876. Previous to his graduation, in May, 1874, he moved to Steele County and settled in Blooming Prairie, and after his graduation took up the practice of medicine in that village.

At the outbreak of the Civil War he enlisted for three months and as the quota was already full he was discharged. Later he enlisted in Company A, Second Minnesota Cavalry, and served until the end of the war.

In September, 1892, he moved to Owatonna, establishing a wide practice there. Ceasing his medical efforts in 1902, he took his wife to Cannon City, Colorado, for her health. She died there in 1903. Afterward he returned to St. Charles to make his home with a niece, Mrs. J. C. Hendee, and about ten years ago moved to Florida.

DR. M. N. TRIPLETT

Dr. M. N. Triplett, a pioneer physician of Floodwood, Minn., died at the age of 68 at his home Friday, December 8, 1922.

Dr. Triplett was born in Winchester, Pa., in April, 1854. He received his medical training at the University of Louisville, from which institution he graduated in 1895. He moved to Floodwood in 1902 to practice his profession and later established the Floodwood Broadaxe, a weekly paper now out of existence. Dr. Triplett was a candidate several years ago for the state legislature from the Fifty-ninth District.

He is survived by his wife and one daughter, Mrs. H. H. Hovry of St. Paul, and one sister, Mrs. A. R. Adams of Charlestown, W. Va.

DR. L. S. B. ROBINSON

Dr. L. S. B. Robinson, who formerly practiced in St. Paul, died while on sick leave from Ft. Bayard, New Mexico, at

San Diego, California, December 17, 1922. The cause of death was a perinephritic abscess and complicating heart disease.

Dr. Robinson left St. Paul some years ago to become superintendent of the Nebraska State Tuberculosis Sanatorium, and at the time of the war entered the army. He was still in service at the time of his death.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

LYMANHURST SCHOOL FOR TUBERCULOSIS CHILDREN

February and March, 1923

PROGRAM OF THE CONSULTING MEDICAL STAFF

All meetings will be held at 8:00 P. M. in the Lymanhurst School, 18th and Chicago.

F. E. Harrington, Commissioner.

J. A. Myers, Chief of Staff.

February 13.—The Tuberculosis Crusade in Minnesota. H. Longstreet Taylor, M.D., Superintendent, Pokegama Sanatorium; Chief of the Tuberculosis Service, St. Paul City and County Hospital.

February 27.—Educational Problems in the Special School. Miss Kathrine Young, Principal of the Lymanhurst School for Tuberculous Children.

February 27.—A Study of the Gastro-Intestinal Tract of 250 Children in the Lymanhurst School. C. B. Wright, M.D.

March 13.—Extrapleural Thoracoplasty. E. S. Mariette, M.D., Superintendent and Medical Director, Glen Lake Sanatorium.

March 27.—Bronchiectasis in Childhood. R. G. Allison, M.D., and R. W. Morse, M.D.

March 27.—The Social Service Aspect of the Lymanhurst Outpatient Service. H. Lippman, M.D.

All persons interested in tuberculosis are invited to attend these meetings and participate in the discussions.

NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

Dr. F. W. Behmler of Lafayette was elected president of the Nicollet-Le Sueur County Medical Society at the annual meeting held December 13, 1922, at Le Sueur. Other officers elected were: Dr. S. Ericson, Le Sueur, vice president; Dr. J. E. Le Clerc, Le Sueur, secretary; and Dr. F. P. Strathern, St. Peter, treasurer.

A banquet was served at 6:30 o'clock, followed by a program which included a talk by Dr. J. W. Daniels of St. Peter on the climate of Arizona and a paper on "Pemphigus Neonatorum," with a report of two cases which was read by Dr. Behmler.

SIoux VALLEY MEDICAL ASSOCIATION

The fifty-fourth semi-annual meeting of the Sioux Valley Medical Association took place Thursday and Friday, January 25 and 26, 1923, at the Martin Hotel in Sioux City, Ia.

Speakers of prominence who appeared on the program included: Dr. A. J. Ochsner, Professor of Surgery, University of Illinois; Dr. Martin Fischer, Professor of Physiology at the University of Cincinnati; Dr. Wm. Engelbach, Professor of Medicine at the St. Louis University; Dr. Dean Lewis, Professor of Surgery at the Rush Medical College; Dr. Clifford Grulee, Professor of Pediatrics at Rush Medical College; Dr. M. A. Blankenhorn, of the Department of Medicine, Western Reserve University, Cleveland, Ohio; Dr. J. S. Evans, Jr., Professor of Clinical Medicine at the University of Wisconsin; Dr. Henry Schmitz and Dr. Lewis Bremerman of Chicago.

RED RIVER VALLEY MEDICAL SOCIETY

The annual meeting of the Red River Valley Medical Society was held in the Society rooms at Crookston, Thursday, December 21, 1922. An attendance of twenty members was reported.

Papers were read by Dr. M. O. Oppegaard, Crookston; Dr. O. F. Melby, Thief River Falls, and Dr. George Fahr of the University of Minnesota Medical School.

Officers elected for the ensuing year were: Dr. O. E. Locken, Crookston, president; Dr. L. L. Brown, Crookston, secretary-treasurer; Dr. J. Ohmstad, McIntosh, vice president.

The next meeting of the Society will be held in Crookston some time in March.

CENTRAL MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Central Minnesota Medical Association was held in Willmar Thursday, December 14, 1922. Dr. John C. Jacobs, Willmar, was elected president and Dr. C. L. Scofield, Benson, was elected secretary-treasurer.

The program included "Public Health Work as a Menace to Regular Medicine," by Dr. C. L. Scofield; "The Future of Medicine," by Dr. John C. Jacobs, and "Injuries to the Knee Joint," by Dr. K. A. Danielson.

Following the regular session a banquet was served to the visiting physicians. Wives of the members were entertained at the home of Mrs. I. C. Benson in the afternoon.

OF GENERAL INTEREST

Dr. Mary S. Knight and Dr. E. Asbury, both of Rochester, were married in Cincinnati, January 2.

Dr. Walter N. Rowley, Rochester, has returned from a trip to Virginia and Washington, D. C.

Dr. E. H. Nelson of Chisholm has returned from a ten days' trip to Chicago and Detroit, Michigan.

Dr. A. W. Adson of Rochester addressed the Chicago Medical Society at their meeting in December.

Dr. Lida J. Stacy of Rochester read a paper before the South Dakota Medical Association in December.

Dr. and Mrs. W. F. Braasch of Rochester are the parents of a baby boy, John William, born December 11, 1922.

Dr. Guy D. Murphy, who has been in Keeline, Wyoming, for several years, is now located at Murdock, Minnesota.

A ten pound baby boy, John William, was born December 28, 1922, to Dr. and Mrs. W. L. Benedict of Rochester.

Dr. J. B. Gumper, formerly of Becker, Minnesota, located in St. Cloud for the practice of medicine the first of the year.

Dr. I. F. Seeley of Northfield was recently elected city physician to fill the vacancy left by the death of Dr. J. G. Phillips.

Dr. John A. Regner, formerly of Fertile and Winger, Minnesota, has moved to Warren, where he will continue his practice.

Dr. and Mrs. J. D. Paradine of Duluth are in the East, where Dr. Paradine is doing medical research work in New York.

Dr. and Mrs. C. S. Williamson of the Mayo Clinic are the parents of a baby daughter, Florence Marian, born December 14.

Miss Mona Sibeck of Little Rock, Arkansas, and Dr. Vern Hunt of Rochester, were married in Little Rock, December 28.

Dr. H. O. Foucar of the Mayo Clinic was married to Miss Janet Stevens of London, Canada, December 14, 1922, in London.

Miss Dorothy Cannon of Haddenfield, New Jersey, became the bride of Dr. P. N. Jepson of Rochester in Haddenfield, December 28.

Richard Hugh and Robert Charles are the names of the twin sons of Dr. and Mrs. H. B. Grimes of Madelia, who were born December 21, 1922.

Drs. B. J. and A. F. Branton of Willmar have opened their offices in the Willmar Hospital, which has recently been enlarged and re-equipped.

Dr. C. M. Adkins, for the past three years of Thief River Falls, has returned to his former location at Grygla, where he will have charge of the hospital there.

Dr. P. C. Davison of Willmar opened the Davison Hospital the latter part of January. The new hospital has accommodations to care for fifteen patients.

Dr. E. S. O'Hare, formerly of Powers Lake, N. D., has moved to Bellingham, Minnesota, where he took up the practice of medicine the latter part of December.

Dr. and Mrs. J. B. Dunn of St. Cloud are rejoicing over the arrival of their first grandson, John Robert Stevenson of that city, who has been named for his grandfather.

Dr. Louis Hiniker, who recently completed his training at the City Hospital, St. Paul, has become associated in the practice of medicine with Dr. F. J. von Bohland of Belle Plaine.

Dr. W. F. Cantwell of Little Fork has been chosen as one of twenty graduates of the University of Minnesota Medical School to revise the medical curriculum of the college.

The Mounds Park Sanitarium, St. Paul, has announced

the completion of its psychopathic department, which is organized along advanced lines for treatment of the milder psychoses.

Dr. E. D. Osborne, who was associated with the Mayo Clinic and Foundation for the last three years, left December 23 to become an associate with Dr. Grover W. Wende of Buffalo.

Eleven fellowships were granted to applicants by the Mayo Foundation January 2, 1923. Of these, one is in medicine, one in pediatrics, one in pathology, and eight are in surgery.

Dr. Robert W. H. Guilmette of Worthington has moved to Argyle, Minnesota, where he will practice medicine. Dr. Guilmette succeeds Dr. J. A. Roy, who is now practicing in Red Lake Falls.

Dr. John L. Haskins, who has been located at Morgan, has removed to Northfield. Dr. Haskins sold his practice to Dr. J. Adams, who formerly was at Morgan and is now coming back from California.

Dr. C. R. B. Crompton, who for the past three years has been a Fellow in the Mayo Foundation, left Rochester December 21 for Toronto, where he will become an associate with the Lockwood Clinic.

Drs. W. I. Lillie, H. L. Goss, E. G. Senty, N. H. Copenhaver, L. D. Powell, and C. A. Crompton of Rochester received the degree of Master of Science from the University of Minnesota in December.

Dr. Warner Ogden, who recently completed a six months' course in surgery in New York, has returned to St. Paul, where he is associated with his father, Dr. B. H. Ogden, with offices at 718 Lowry Building.

Word has been received of the appointment of Dr. Harry W. Sargeant as head of the Milwaukee County Hospital at Milwaukee, Wisconsin. Dr. Sargeant has been acting head of the hospital for the past six months.

Dr. James B. McEnaney, who has been practicing at Holland for the past few months following his practice of 30 years at Ashton, Iowa, has located at Ruthton, Minnesota, where he took up his practice last month.

Dr. C. F. Palmer, formerly of Chicago, has located permanently in Albert Lea in association with his father, Dr. W. L. Palmer. Dr. C. F. Palmer has been practicing in Chicago hospitals for the past two years.

Dr. Stanley R. Maxeiner has severed his connections with the Surgical Clinic of Minneapolis and is now located at 301 Physicians and Surgeons Bldg., Minneapolis, where he is continuing his practice in surgery.

Dr. S. Amberg of the Section on Pediatrics of the Mayo Clinic has been granted a two months' leave of absence from his duties at the Clinic, and has gone to Europe to visit clinics in Holland, Germany and Austria.

Announcement has been received of the marriage of Miss Amalia C. Olson of Minneapolis and Dr. Joseph C. Baird of Eau Claire, Wisconsin, which took place at the home of the bride's sister in Minneapolis, December 10.

A Thanksgiving Day wedding was that of Dr. A. H. Nerad and Miss Florence Meisch, which took place at Argyle, where Dr. Nerad has his practice. The bride formerly taught Domestic Science in the schools of Argyle.

Dr. Manuel C. Elmer, associate professor of sociology at the University of Minnesota, was chosen president of the Hennepin County Tuberculosis Association at their meeting in December. Dr. Elmer succeeds Dr. Henry Ulrich.

Dr. C. T. Ekelund, formerly of St. Paul, became associated with Drs. T. F. Hammermeister and F. J. Pelant of New Ulm, January 1, 1923, and they will practice under the name of the Ekelund, Hammermeister and Pelant Clinic.

Announcement has been made of the marriage of Dr. Baldwin Borreson of Bemidji and Miss Alice Graves of Duluth, which occurred Saturday, December 30, 1922, in Duluth. Dr. and Mrs. Borreson are now at home in Bemidji.

Dr. William A. Kennedy, formerly associated with Dr. W. E. Patterson of the Todd-Patterson Clinic, Minneapolis, is now a member of the St. Paul Clinic. Dr. Kennedy was a Mayo Fellow in Ophthalmology prior to his location in St. Paul.

Dr. J. T. Bowers of River Falls, Wisconsin, and formerly of Lake City, Minnesota, has accepted the position of chief surgeon of the Swedenburg hospital at Thief River Falls. Dr. Bowers recently completed a course of postgraduate work in Chicago.

Dr. W. N. Rowley, associate in the Section of Obstetrics of the Mayo Clinic, resigned in January to locate in Huntington, West Virginia, where he has been appointed to the staff of one of the local hospitals, and where he will engage in private practice.

Dr. Virgil J. Schwartz of Minneapolis is now in Vienna, where he is continuing the study of the eye, ear, nose and throat. He will also visit clinics in Budapest, Hamburg, Berlin, Paris and London. Dr. Schwartz expects to remain abroad several months.

Dr. R. E. Swanson of Alexandria and Miss Katherine Jacobson also of Alexandria were married December 28, 1922. Dr. and Mrs. Swanson will make their home in Minneapolis, where Dr. Swanson will take a three years' postgraduate course in medicine.

Dr. Henry F. Helmholtz, chief of the Division of Pediatrics at the Mayo Clinic, Rochester, was the principal speaker on the program of the meeting of the Lymanhurst staff, January 23. "Primary Infection in Tuberculosis" was the subject presented by Dr. Helmholtz.

Dr. John J. Gelz of Richmond, who has been in Vienna, Austria, for special study, is now in London and after a short stay there will return to America, where he plans to take a course in American methods of refraction in Philadelphia before returning to Richmond.

In October, 1922, Dr. E. S. Boleyn of Stillwater was robbed of a Leitz microscope, Zeiss oil immersion lens and a Bausch-Lomb mechanical stage. This apparatus was taken from his office and attention of the profession is called to the fact in case attempts are made to dispose of any of the parts mentioned.

Dr. A. H. Parks of Minneapolis has been appointed to the Board of Public Welfare of Minneapolis to succeed Dr. Archa Wilcox, who resigned recently. Dr. Parks has been chief surgeon at the Minneapolis General Hospital for the last four years and has been connected with the hospital staff for fifteen years.

"Some Etiological Factors in Surgical Tuberculosis in

Childhood" was the subject of an address given by Dr. Wallace H. Cole, of the State Hospital for Crippled Children, St. Paul, before a meeting of the consulting medical staff of the Lymanhurst School for Tuberculous Children, the evening of January 9. Dr. Thomas Ziskin, Minneapolis, also read a paper on "The Heart in Tuberculosis."

An extensive program of public health lectures is again being given at Rochester this winter. Dr. L. D. Bristol of the University of Minnesota Medical School gave the lecture for the week of January 4. Health talks are given each week under the auspices of the Health Department and have been the means of conveying information on preventive medicine and hygiene to a large number of people.

A decision in favor of the Minnesota State Medical Association was filed by Judge F. M. Catlin in Ramsey County District Court, December 30, in answer to the suit brought against the State Association in regard to the legality of its action in revoking the Brown-Redwood County Medical Society charter in 1918. The charter was revoked because of refusal of the Brown-Redwood Society to expel Dr. L. A. Fritzsche of New Ulm after he had been pronounced guilty of disloyalty by the State Public Safety Commission. The petitioners asked for a writ of mandamus to compel the State Association to reinstate the charter and Judge Catlin's ruling was made in denying the writ.

The Northwestern Medical Officers' Association of the World War held its third meeting on the evening of January 9, 1923, at the St. Paul Hotel. Advantage has been taken of the assembly of doctors at St. Paul Clinic Week for the meetings, but it is planned to hold the next meeting at a different time, the exact date and place to be determined later.

At this year's meeting the group of doctors present was addressed by Colonel Munroe, head of the reserve organization in this district, and Major R. W. Whittier, executive of the medical reserve in this territory. An explanation of the general plan of the reserve army and the medical reserve in particular was presented and those present were urged to join. Attention was called to the difficulties encountered at the outbreak of the World War incident to lack of preparation. It was pointed out that in case of a similar future national emergency there may not be sufficient time to organize and train medical men as in the recent conflict. The advantage of present assignment to desirable type of medical work and the opportunity through correspondence courses and training camps to obtain advancement in the reserve were emphasized. In case of a repetition of a national emergency the medical profession will respond as it did in the World War and the arguments why medical men should join the reserve are irrefutable, especially as the reserve medical corps cannot be called out for minor emergencies nor is attendance at training camps compulsory. Members of the profession are urged to join at once and former medical officers will be accepted without examination. Communications may be addressed to Major R. W. Whittier, 400 Kasota Building, Minneapolis.

Dr. J. Frank Corbett, Minneapolis, was elected president of the Northwestern Officers' Association; Dr. W. F. Maertz, New Prague, vice president, and Dr. Stanley L. Maxeiner, Minneapolis, secretary-treasurer. An informal and most enjoyable evening was spent and the meeting pronounced a great success by all present.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

MEETING OF DECEMBER 13, 1922

Dr. H. Longstreet Taylor presiding.

Dr. F. W. SCHLUTZ reported a case of intestinal intussusception.

The case I wish to report tonight was seen in consultation with a local surgeon about ten days ago. The baby had been brought to him from out of town for a diagnosis of some acute abdominal condition. It was a six months old baby, apparently in an extremely critical condition.

There had been tremendous loss in weight. Both cornea were completely destroyed by ulceration, and the baby was in a semi-comatose condition. The illness had developed rather suddenly about two weeks before. The baby was in perfect health before the illness began. The onset was sudden, with some acute pain simulating colic, and attended by moderate vomiting. The baby did not seem the same after these symptoms developed, and continued uneasy and occasionally in pain.

About the second day a reddish dark mucus made its appearance, and there was some showing in the passage that indicated the presence of blood. No definite diagnosis was made by the local physician except that he suspected that some acute abdominal condition, most likely nutritional, was present. He came to this conclusion about the fourth day of the illness. All food had been withheld for four days. The baby began to vomit on the second day and continued vomiting occasionally for the next four or five days. It seemed continually strained, but had very little stool and no stool after the third day.

Fever developed about the second day. Cathartics were given on the second day, but no stool followed. There was no history of any tumor having been felt at any time. The bloody discharge ceased after the fifth day. The baby continued to grow worse.

On the tenth day of the illness there seemed to be a complete prolapse of the rectum. This continued until the baby was brought into the city. The infant was practically moribund when seen. Emaciation was extreme, and there was a continual slight grunting effort at straining. The rectum showed an extrusion of about four inches of the bowel. Examination showed that this was bowel and was not a prolapse of the rectum. No tumor mass was felt in any part of the abdomen. The prolapsed bowel could be replaced quite readily. No operative procedure was undertaken that night.

The baby was almost completely dehydrated, as no liquids had been given for the last four or five days. A 5 per cent glucose solution was given by the peritoneal route, and the operation attempted the following morning. A complete intussusception was found and the bowel was gangrenous at the point where the intussusception began, and was apparently in the process of amputation. If the baby had lived this would probably have resulted in a complete expulsion of the intussusceptive portion. There was only a moderate and local evidence of peritonitis. The baby died at noon on the day of the operation.

DR. WHITE: Could you locate the point at which the intussusception had begun?

DR. SCHLUTZ: It was rather impossible to do this on account of the gangrenous condition of the tissues, but it seemed to be the usual point of entry of the small bowel into the cecum. The interesting feature of this case to me is the complete extrusion of the bowel, and the length of time the baby lived with so serious a condition present in the abdomen. Usually the intussusception cases succumb before the end of sixty or seventy-two hours, unless the condition is recognized early and prompt surgical relief given.

DR. A. SCHWYZER: I think that in these cases the diagnosis is not always easy and still if we have the picture in mind we can hardly mistake it. Not so very long ago we had one case where the ileum was in the cecum and the large gut inverted clear down to the descending colon. This had not lasted so very long and was not even necrotic. The child got well, though the colon burst on reinvagination.

In connection with the treatment I would like to say that a number of methods to avoid reinvagination have been proposed. I had a number of cases and I make a fixation of the lowest ileum to the ascending colon something like a double-barrel shotgun effect. I fastened the ileum for nearly 3 inches (or 2 inches, according to the age of the child) to the ascending colon; and sometimes we have, in addition, fixed the region of the ileocecal valve toward the promontory, and in this way we have had no reinvagination.

DR. H. B. SWEETSER: This case is of two-fold interest. First because of the effort made by nature to cure the condition of spontaneous amputation of the diseased intestine, in which she almost succeeded. It is also surprising that the child was able to withstand so serious a lesion for so long a time as fifteen days.

The second and much more interesting point is that a diagnosis should not have been made at least by the second day. A history of sudden intense pain in the abdomen repeated, with intervals in which the child is apparently perfectly well, even if the doctor sees him only in these intervals, should make the diagnosis of intussusception very clear.

Much has been said about educating the public in matters medical, but it seems as if the doctors also could stand a little more education in clinical signs and symptoms.

I was interested also in the statement that the child was allowed to go for five days with practically no fluid and was markedly dehydrated. This neglect to supply fluid is a serious oversight in any case, and not infrequently is the principal cause of the threatening symptoms. Several months ago I was asked to see a child seven days old who was supposed to have obstruction of the bowel. The child had vomited a great deal and no effort had been made to supply water except by mouth. The temperature was 103-104 degrees and the baby was much emaciated. The x-ray did not show obstruction, and water given subcutaneously and intraperitoneally promptly resulted in improvement and eventual recovery.

DR. L. C. BACON reported a case of perforated chronic ulcer of the stomach.

A business man of 74 years of age, still in active life and of vigorous make-up, ate his usual dinner a few days since, and a few minutes after experienced some pain in the left hypochondrium. The pain gradually increased through the night. I saw him the following morning and found his temperature slightly subnormal, pulse of fairly good character and about 100 per minute.

Physical examination was negative except for marked rigidity and tenderness of the left hypochondrium. He stated that he had never had any stomach trouble and that he had been feeling particularly well for several days, but had taken a dose of compound licorice powder the night before, which had caused several evacuations of the bowels.

I advised an enema and gave $\frac{1}{8}$ of a grain of morphin hypodermically, but without relief. He was sent to the hospital and an attempt made to pass a stomach tube, but this could be inserted only to about the cardiac orifice. As the patient was rapidly growing worse it was decided to operate under the opinion that we were dealing with a perforated ulcer or obstruction from unknown cause. While being moved to the operating room the patient suddenly became cyanotic and his pulse mounted to 150. A hypodermoclysis was given and an incision, under local anesthesia, was quickly made through the left rectus. Upon opening the peritoneum gas and gastric contents escaped and the tremendously distended stomach protruded. The distention had caused a rotation of the stomach and a valve-like closure of the cardiac orifice. There was a perforated chronic ulcer on the posterior wall of the stomach near the greater curvature and nearer the cardiac than the pyloric orifice. The patient's condition was so desperate that no effort was made to close the perforation, but drains were placed and the stomach distention relieved by means of a catheter passed through a purse-string suture. With the relief of tension the pulse dropped to the neighborhood of 100 and the patient returned to bed. Death ensued in a few hours.

The history of no previous stomach trouble and the gradual increase of pain made the diagnosis difficult in this case.

DR. ANGUS MORRISON read his Thesis entitled "Mental Hygiene and Our Universities."

Discussions by Drs. Herbert Jones, Corbett, White (S. M.), Cross, Bacon, Ramsey and Dr. Morrison in closing.

DR. HERBERT JONES: I think the Society ought to thank Dr. Morrison for bringing up this subject, which is out of the usual line of our discussions. It certainly ought to be interesting for a body of this kind. There has been during the last few years a great tendency to govern health along public lines. This phase is probably the last one to be taken up by the state health authorities.

The greatest danger I see in it is in the untrained or poorly balanced instructor examining students and trying to judge the student's mental condition without sufficient basis. I can look back and see in my class at school that a good many students who were regarded as poor students

have made good, and a large number of those who were valedictorians and Phi Beta Kappas were never heard of afterwards. That is, the scholars who conformed to the wishes of the professors were given high marks, while some nondescript student—a mere private in the ranks—came forward in after years and made a good record. It seems to me there is the danger in letting the college professor say who shall be admitted to the special courses.

As the world progresses, the ability to think clearly and to control one's mental activities are going to be the important things in the world and certainly they need the attention of our universities.

DR. CORBETT: I perhaps should hesitate to discuss this problem, but it seems to me that our consideration of mental hygiene in the University comes too late to benefit the individual very materially. The early years of a child are the important ones, and if this education has been neglected we may not hope to correct much of this deficiency that may develop during the college years.

In our present educational methods, are the requirements such as to develop a strong mentality? Personally, I feel that the children of the present generation are missing many things that the older generation had the advantage of. When we started to school we were taught the alphabet; we were taught to spell correctly; we were taught to figure correctly; and one who did not accomplish these things did not advance any in his educational career. Today go into the university and how many students can spell correctly? How many can write, and how many can figure the simplest problem? I think we should go back some in our educational system and correct these things. It is not merely a matter of selecting individuals to environment, but to develop the great majority of individuals so that they may master these environments. Our educational system should be one of development and discipline of the individual.

DR. S. M. WHITE: The lines which the discussion has already taken illustrate the breadth of the subject which Dr. Morrison has brought up. It might lead into the education of the child and the practicability of educational methods in our institutions of learning.

Dr. Morrison's paper, as I take it, would bring up the question of mental hygiene for students, making it a common property of the university student, and would bring up also the question of the early discovery of aberrations, which, I take it, was also one of the themes which Dr. Morrison was discussing. My own discussion I will limit to that portion of the essay.

Just as in our movements toward better health conditions in all lines, the so-called Students' Health Service is already making headway in the early discovery of infectious diseases among students, and I believe successfully controlling epidemics better than they have ever been controlled in the past, and in that way contributing to better health in the student body. Just so, a study of the mental problems which confront the student is of benefit to the student body.

We are definitely in the period of infancy in mental hygiene. One interesting phase of that was brought out by the study made in recent years of entering students in the Medical School. An effort was made to study the

applicants for admission so far as mentality tests were concerned. It is believed now by those who were interested in it at the time that those mental tests did not adequately test the student for the work which he was intending to follow. We realize that the best tests are those which are determined by the history of that individual, which study his reaction to his normal everyday life. The tests of cardiac function which make him step up on a chair ten times and then measure pulse rate and blood pressure, taken in the office, seem to have many sources of error. Just so the mental test may have a good many sources of error, such as the physical condition of the student at the time the tests are taken, and other sources difficult to evaluate.

The kind of study which the essayist has proposed seems to me to be one which has a real field. The proposal to have in connection with the Students' Health Service an individual thoroughly trained in the study of the mind, who shall confer with and study out the problems of the student, is a good one. Such an expert student of the mind should be delegated to inquire early into the difficulties of those students who are having them. I believe this would be productive of a very great advance because as a long-time teacher I have seen instance after instance in which if a student could have been advised early about his whole life and its difficulties it would have gone far toward helping in the adjustment. There is a fairly large number of those people who are entering our institutions of higher learning and who fail to secure the best that can be given by the institution. Mental hygiene properly directed and applied in this one field alone would more than justify any expense involved.

DR. CROSS: To me the most interesting feature of Dr. Morrison's paper was the response, or lack of response, to his questionnaire, showing the lamentable lack of the sort of thing which he has proposed. He ought perhaps to have defined mental hygiene to these deans and professors.

Dr. Corbett spoke of the need for very early training, and I think he might have gone a good deal farther than that. From the standpoint of a mere doctor it has seemed to me that at the university age, or even the graduate school age, development does not take place in such a degree in people of mature age that any hard and fast line can be drawn which will take the square man out of the round hole and tell him just where he ought to be. If Dr. Morrison includes in this the expert advice which would adjust his mental environment and allow him to exercise his real ability, it might result in very great good.

I was reminded of two exceptions. One of our State Senators, when a boy, applied for a job in a dry goods store to a very acute man, a man who was a good judge of men. He was sixteen years old at the time and wanted to go into the store and become a merchant. The man talked with him for a while and then told him he better go back to the farm, that he would never be a good merchant.

The second exception was a classmate of mine. He came to the university a very quiet fellow interested deeply in scientific work and not in other things very much. He did not speak good English and did not talk

very much anyway. The instructors did not rank him very high. He is now a highly cultured man. He has taken his place in social circles in Boston to a degree that is to be emulated, in addition to occupying an enviable place as a research chemist and teacher.

Dr. Morrison refers to an expert who is able to go farther and foresee the capacity of the man of university age than we have dreamed of. These things are so broad in their application that it is certainly stimulating to hear about them. I cannot as yet see, except as separating out those of incurable mental aberrations, how it is going to work out. But if it saves one man from the wrong track it is a good thing. If, in addition to that, he can prescribe the change in mental attitude it is desirable.

DR. L. C. BACON: I have listened with much interest to Dr. Morrison's valuable thesis and its discussion, and the following anecdote would emphasize the necessity for thoroughly qualified individuals to administer departments of mental hygiene and make deductions therein. Dr. Vaughan once told me that in the early eighties a well-known physiologist came to the University of Michigan and was asked by Dr. Vaughan to form an estimate of the capacity of the senior class. The first three men sent up were reported back in uncomplimentary terms as unfit for the field of medicine. One was Dr. W. J. Mayo; one our Brainerd friend, Dr. Courtney; and one was a distinguished eastern man—I am not sure of the name. The notable careers of these men coupled with the eminence of the physiologist would suggest that there are many factors in the mental processes of young people which cannot be "measured by rule of thumb."

DR. RAMSEY: I think Dr. Richard Smith of Boston made an interesting experiment in a boys' school. He made a careful study of the physical condition of the students, with the result that two or three of the boys at the foot of the class were soon transferred to the head of the class. He at least demonstrated the effects of the physical health upon the mental condition.

DR. MORRISON, in closing: The subject is a perfectly enormous one, and after I got started on it I was appalled. The paper was more of an effort to find out if we could make a further study and how it might best be done.

As Dr. Corbett has mentioned, the ideal time for mental hygiene is in early childhood. But there are many children who carry along all right at home and do not break until they are thrown on their own, and I think that they should have an opportunity to turn to some one who could give them the proper advice. I have talked with two or three friends who had been to different colleges. One told me that what saved him was having some very good upper classman friend who straightened him out. Other cases need more profound advice.

Dr. Jones brought out the fact that some Phi Beta Kappas did not make good. They made good in their studies in college; why not out in the world? That is what we would like to find out. According to Army reports there are great numbers of people who are unable to go beyond the fifth grade, but the men and women who are going to colleges have better mentality. If some of the men and women who are particularly brilliant are failures, why are they failures? Dr. Paton brought up this question of

mental hygiene in the universities at the last American Neurological Association meeting. About half of those discussing the question saw great difficulties in its practical application, while others felt that some attempt should be made to introduce it. Personally, I feel as if I really know very little about how we should approach this.

Why not do some further investigating in the universities to see whether this work really needs to be carried on there?

The trouble with many of us is that we avoid facing certain facts. Some of the men coming back from war developed marked nervousness. They had been through periods of extreme danger and had seen things, heard things, and done things which they wished to forget. Instead of adjusting themselves, that is, facing these facts, they suppressed these disagreeable thoughts. As a result they were restless, could not sleep, or had bad dreams. They had faced certain things which they had to face. One must face a situation and adjust himself to it. When you adjust yourself to a situation it does not trouble you any longer. It is the situation which is not faced squarely and the thoughts which are repressed that trouble us.

HARRY P. RITCHIE, M. D., Secretary.

NEW AND NON-OFFICIAL REMEDIES

During December the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

POWERS-WEIGHTMAN-ROSENGARTEN:

Arsenobenzol-Billon.

MERCK & COMPANY:

Digitan Ampules (for Hypodermic Use).

Digitan Ampules (for Oral Use).

Ven Calcium Cacodylate Ampules, $\frac{3}{4}$ grain: 1 c.c. contains calcium cacodylate-Ipco (see New and Non-official Remedies 1922, p. 55), 0.05 gm. ($\frac{3}{4}$ grain).

Ven Calcium Cacodylate Ampules, $1\frac{1}{2}$ grains: 1 c.c. contains calcium cacodylate-Ipco, 0.097 gm. ($1\frac{1}{2}$ grains).

Ven Calcium Cacodylate Ampules, 3 grains: 1 c.c. contains calcium cacodylate-Ipco, 0.195 gm. (3 grains).

Ven Calcium Cacodylate Ampules, 5 grains: 1 c.c. contains calcium cacodylate-Ipco, 0.324 gm. (5 grains).

Ven Calcium Cacodylate Ampules, 7 grains: 1 c.c. contains calcium cacodylate-Ipco, 0.453 gm. (7 grains). Prepared by the Intra Products Co., Denver, Col.

Mercurialized Serum-Lederle for Intravenous Injection.—Each package contains the equivalent of $\frac{1}{3}$ grain (0.022 gm.) of mercuric chloride in 8 c.c. normal horse serum. The initial dose is $\frac{1}{12}$ grain of mercuric chloride. This may be gradually increased to $\frac{1}{3}$ grain. For a discussion of the actions, uses and dosage of mercurialized serum, see New and Non-official Remedies 1922, p. 189. Lederle Anti-toxin Laboratories, New York.

Silvol.—A brand of protargin mild-N. N. R. (See New and Non-official Remedies 1922, p. 326.) Silvol is a compound of colloidal silver with an alkaline proteid and contains

about 20 per cent of silver. Parke, Davis & Co., Detroit. (Jour. A. M. A., Dec. 9, 1922, p. 2001.)

Arsenobenzol-Billon.—A brand of arsphenamine-N. N. R. For actions, uses and dosage, see New and Non-official Remedies 1922, p. 43. Arsenobenzol-Billon is marketed in ampules containing, respectively, 0.1, 0.2, 0.3, 0.4, 0.5, and 0.6 gm. of arsenobenzol-Billon. (Jour. A. M. A., Dec. 16, 1922, p. 2085.)

PROPAGANDA FOR REFORM

Silicon in Tuberculosis.—In Germany the use of preparations of silicon in the treatment of tuberculosis has been proposed on the assertion that silica was found in calcified tuberculous lesions and lung stones, and that consequently silicon, as well as calcium, is an important element in the formation of the beneficent scar tissues whereby the lesions are healed. However, Mayer and Wells of the University of Chicago find that the content of silica is no larger than one finds in comparable uncalcified tissues of adults. The use of silicon in therapy requires better evidence than is now available. (Jour. A. M. A., Dec. 2, 1922, p. 1935.)

Neutral Acriflavine in Septicemia.—Neutral acriflavine has been used intravenously in septicemia and similar conditions, but the available evidence does not demonstrate the value of the drug in these conditions. Also, the available evidence is insufficient to judge whether the intravenous use of the drug has dangers other than those inherent in intravenous medication. (Jour. A. M. A., December 9, 1922, p. 2023.)

"Esterol" Not Admitted to N. N. R.—"Esterol" is the proprietary and non-descriptive name under which the firm of Frederick Stearns & Company markets benzyl succinate. Benzyl succinate has been admitted to New and Non-official Remedies. Its properties are similar to those of benzyl benzoate, but being insoluble it is almost tasteless and does not produce gastric discomfort. The Council on Pharmacy and Chemistry declared the proprietary brand of benzyl succinate sold as "Esterol" inadmissible because: (1) Stearns & Company are neither the discoverers of the product nor of the therapeutic properties and therefore are not entitled to apply a proprietary name to the product. (2) The labels of the trade packages contain recommendations for the use of Esterol in dysmenorrhea, asthma, colic, hiccup, and thus advertise it indirectly to the public. (Jour. A. M. A., December 16, 1922, p. 2102.)

Cluttering Up Pharmaceutical Nomenclature.—Esterol is Frederick Stearns & Company's proprietary name for benzyl succinate. The product *per se* is unobjectionable. The fundamental objection to Esterol and the chief reason for its non-admission to New and Non-official Remedies is its name. A multiplicity of names for any one medicinal substance is against the interests, not only of scientific prescribing, but also of public welfare. When acetanilid was first introduced under a thousand and one names, cases were reported in medical literature of physicians calling for acetanilid under two or more names in the same prescription. More recently there was the ridiculous duplication of names for hexamethylenamin. Later yet came the even greater duplication in the case of phenolphthalein. Had Stearns & Company been content to market their brand of benzyl succinate as benzyl succinate-Stearns, the product, as far as the name is concerned, would have been acceptable

for New and Non-official Remedies. Such a name would give the firm any legitimate protection which it should desire and at the same time give physicians full information about its composition. (Jour. A. M. A., December 16, 1922, p. 2090.)

Hayes Asthma Remedy.—This preparation is exploited by P. Harold Hayes, Buffalo, N. Y. Some years ago, six of the seven remedies were examined. The analysts reported one, a cough medicine, to contain oils of turpentine, peppermint, etc., emulsified and sweetened. A second contained potassium iodid. A third preparation was reported to contain potassium, sodium and ammonium iodid. A fourth preparation contained iron peptonate. A fifth preparation consisted of capsules containing quinin sulphate. A sixth preparation consisted of pills which contained as their active constituent resin of jalap. (Jour. A. M. A., December 30, 1922, p. 2248.)

Two Electronic Diagnoses of Abrams.—Instead of the blood of a patient, a physician sent the blood of a guinea pig to one J. W. Eisiminger of Oklahoma City, who operates a physico-chemical laboratory for the electronic reactions of Abrams. Eisiminger is an osteopath. The report received by the physician on the patient, whose history was sent in, reads as follows:

"Congenital diminished resistance, cerebro-spinal and digestive strain, 39 ohms. Metastatic Carcinoma, 6 Liver and right colon. Tuberculosis Genito-urinary tract, 6 ohms. Colicsepsis, 4 ohms. Streptococci, infection, 12-25 ohms. in gall bladder region."

Another physician states that he sent Eisiminger some sheep's blood on blotting paper with a blank supposedly for a fifteen year old boy. This physician received the following diagnosis:

"Congenital diminished resistance cerebro-spinal strain 38 ohms. Metastatic carcinoma of left lung and pancreas, 8 ohms. Neisserian infection genito-urinary tract, eyes, 4 ohms. Tuberculosis of genito-urinary tract, 4 ohms."

However, it is possible that these blood specimens were not taken in subdued light and that Eisiminger was not informed if the subjects had red hair nor of their religious faith—factors which are said to play an important part in diagnoses made by the Abrams method. (Jour. A. M. A., December 30, 1922, p. 2247.)

COMMUNICATIONS

December 27, 1922.

To the Editor:

At a meeting of the Rice County Medical Society on December 20, 1922, after a most thorough consideration of the treatment and prophylaxis of Tetanus, the society went on record as being in favor of Tetanus Antitoxin being furnished by the State Board of Health to the public under some such method as is now in use with diphtheria antitoxin.

The society further decided to urge the adoption of this measure by many ways possible.

Very truly yours,

C. M. ROBILLIARD,

Secretary, Rice County Medical Society.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES. 1922. Washington. Government Printing Office. 330 pages.

WHAT COMES FROM WHAT, OR THE RELATIONSHIPS OF ANIMALS AND PLANTS. Charles L. Abbott, St. Paul. 48 pages with diagrams. Published by the author, 600 Ivy Street, St. Paul. 1922. Paper, \$1.00.

TEXT-BOOK OF PEDIATRICS. Edited by Professor E. Feer, Director of the University Children's Clinic, Zurich. Translated and edited by Julius Parker Sedgwick, B.S., M.D., Professor of Pediatrics, University of Minnesota Medical School, and Carl Ahrendt Scherer, M.D., F.A.C.P., Duluth, Minn. First edition in English. 917 pages. 262 illustrations. Philadelphia and London. J. B. Lippincott Company. Cloth, \$8.50.

THE FEMALE IMPERSONATORS. Ralph Werter-Jennie June (Earl Lind), 295 pages. *Medico-Legal Journal*, 1922.

Claiming as fellow Androgynes such an imposing array of immortals as Alexander the Great, Julius Cæsar, Michelangelo, Frances Bacon (who, he claims, wrote Shakespeare's masterpieces), our modest author has appointed himself the spokesman and defender of the "third sex." It is a happy circumstance that all of the above mentioned, excepting himself, are dead, otherwise we might hear of another Androgyne murdered. The book is ostensibly a plea for toleration toward homosexuals or bisexuals as the author prefers to term them. The fact that he himself boasts of belonging to this class of mental cripples makes it an open question whether his motive in writing the book is not rather to appease his appetite for admiration and to recall the pleasant memories of his conquests in the character of Ralph-Jennie, the "Færie" charmer.

He contends that the practices common among this type of degenerates are as natural to them as heterogenous satisfaction is to normal people; that such practices are no more criminal than is overindulgence of normal passion, and that it is only through prudishness and ignorance that they are condemned and punished. He points out that artists and æsthetics are frequently bisexual in their habits and that such practices were formerly in good repute. He attempts to show through a superficial review of the history of the world that the outstanding geniuses were products of those times when homosexuality was prevalent; advances the argument that many great artists were homosexual and points out that at present sex digression is tolerated in the older civilization of Europe. He argues that there is no relation between homosexuality and the gradual weakening, progressive effeminacy and final disintegration and decay of a once virile race.

All of the statements which he makes are certainly open to discussion. As to the harmlessness of homosexuality, perhaps the act itself performed upon a "full fledged"

male is harmless; but there are two other very pertinent questions to be considered. In the first place, supposing the acts to be confined to adults (which they are not) the venereal disease incidence must necessarily be high. The author admits syphilis and its contraction in such a promiscuous class must be frequent. With the Legislature of Illinois contemplating a penalty of from five to twenty years in prison for anyone who transmits a venereal disease and a charge of second degree murder placed against parents giving birth to stillborn syphilitic babies, the penalizing of Androgynes on this charge alone would seem justified.

So far we have only considered the immediate effect upon adults, but unfortunately these people not infrequently seek boys from six to fourteen years of age, boys in the exceedingly plastic stage of moral development. It is not possible for anyone to excite their passions without an indelible trace of it upon their consciousness. Has the writer any psychological data to expound upon this subject? Can he really believe that such acts are harmless to young boys? It is not reasonable to suppose that in such a case the harm done would end with the performance of the act. It is a great deal more logical to expect a scar of an ineradicable nature to be left upon their minds. Given the knowledge of the existence of such practices, would boys not be apt to seek the persons who perform them, form an attachment to them and gradually drift into the underworld which tolerates such friendships? Even in the improbable event that the first act was the last, no action we perform is without a permanent mark upon our psyche.

If there were no other objections to be raised against the toleration of Androgynism, if we could disregard all moral and religious objections to it, the two just stated more than counterbalance the reasons brought forward by the author for its being permitted. In other words if the Androgyne be proven a disseminator of disease and a corrupter of youth, the case against him is fairly complete.

As to the claim of the author that certain great geniuses were Androgynes because their work or habits showed traces of bisexuality, this argument may be disposed of in this way: In the case of Alexander and Julius Cæsar, the author admits indulgence from necessity among soldiers. The only other evidence which he advances is that they were clean shaven and neglected their wives. Conviction on these two points would incriminate quite a number of men. In regard to the geniuses of the Renaissance, Raphael, Michelangelo and Shakespeare, one must have a knowledge of the times to understand the case. The disintegration of Roman civilization in Europe was followed by the Dark Ages. During this period of intellectual barrenness such practices as the author is addicted to were rife.

While as a plea for toleration toward Androgynes the book is a failure, it must be admitted that the author has written a book which is illuminating (whether by accident or intent) as an exposition of Androgyne psychology and which forces the reader to accord to these people the sympathy incident to a clearer understanding of their deplorable condition. This sympathy is somewhat more grudgingly accorded to the author because of his complacency, and his obvious pride in his condition obtrudes itself to an

obnoxious degree. On the whole the book leaves one divided between pity and disgust for members of the "third sex." It appears certain that they are mentally abnormal, that their practices are harmful and that they should not be left at large; but one is doubtful whether the penitentiary or the insane asylum is the proper solution of the problem.

FRANK WHITMORE.

CLINICAL MEDICINE. TUESDAY CLINICS AT JOHNS HOPKINS HOSPITAL. By Lewellys F. Barker, M.D., LL.D. W. B. Saunders & Co. \$7.00.

In this book of six hundred and seventeen pages are presented thirty-one selected cases taken, as the title indicates, from Dr. Barker's Medical Clinics at Johns Hopkins Hospital.

Teaching by case histories and findings always has held a high position in the past and should continue to do so. All of the cases in this book are highly instructive, well presented, with the principal point in each driven home in no unmistakable manner.

Dr. Barker's command of the English language and his use of it make the book easily read, although at times his meaning would be clearer if less involved sentences were used. The volume could be rendered smaller by the elimination of many apparently unnecessary dialogues between interne, patient and Dr. Barker, but even this fault does not detract from the real value of the book, which takes one back to his undergraduate days of the clinic amphitheatre, where we all have listened to the words of wisdom from our experienced preceptors.

EVERETT K. GEER, M.D.

A PRACTICAL TREATISE IN DISEASES OF THE SKIN. By Oliver Ormsby, M.D., Professor and Head of the Department of Skin and Venereal Diseases, Rush Medical College. Second Edition, 1166 pages. Illustrated with 445 Engravings and 4 Plates in Color. Lea & Febiger, Philadelphia, 1921.

Following the regular text-book outline and style Ormsby presents a comprehensive treatise on Dermatology. The text is clear and concise. Symptoms, etiology, pathology, and treatment are given in orderly sequence. Bibliography and references are given in footnotes. The book is thus

an example of orderly arrangement. This fact makes it a most useful reference for the specialist in Dermatology.

Under treatment, general internal medication, diet and hygiene are duly stressed, something oftentimes lacking in text-books of dermatology. The book merits a high place among text-books.

E. C. GAGER.

HOW TO CHOOSE A DOCTOR

Replying to an inquirer who wants to know how to be governed in the selection of a physician, Dr. Wm. A. Brady, in the *Chicago News*, gives the following pointers for the guidance of the layman in choosing his doctor:

First, the name of the good doctor is rarely seen in print.

Second, in making examinations he requires the patient to remove clothing which may interfere with the detection of signs and symptoms.

Third, when he is out of town he is attending a medical meeting or taking a brief postgraduate course.

Fourth, he asks frequently for consultations or refers patients to colleagues for special examinations, and when his patients die asks for autopsies, all because he never gets through studying medicine. This is why he buys so many books and subscribes to so many first-class medical journals.

Fifth, he prescribes simple medicines to meet particular indications at the particular time, and not "ready-made" stuff with which he has recently been "sampled." Or, perhaps, he prescribes no medicine at all, but merely lays down some common-sense rules for the guidance of his patient.

Sixth, he never guarantees or promises a "cure," because to do so would be dishonest.

Seventh, he is invariably a stickler for the observance of the rules of ethics.

Eighth, being an honest laborer, he deems himself worthy of his hire and demands payment.

Ninth, he does not put a patient off with the evasion, "weak lungs," nor does he perpetrate the near diagnosis, "catarrh." He makes a definite diagnosis or frankly admits his inability to do so.

Tenth, "he will do anything short of murder for a loyal patient."

Information regarding new locations, or physicians looking for locations, should be addressed to the office of the Secretary, 403 Central Bank Building St. Paul.

PHYSICIAN WANTED in a wealthy German community 70 miles from St. Paul. Village of 600. High school. Unexcelled water. Address MINNESOTA MEDICINE, B48.

PHYSICIAN WANTED in good North Dakota town. Large territory. Good drug store. Good farming country with large crop. A snap for good man. State qualifications in first letter. Address B46, MINNESOTA MEDICINE.

HANLEY FALLS, MINNESOTA, offers an excellent opening for a doctor. Communicate with President of Commercial Club.

A RESORT TOWN near Minneapolis having a summer population of 15,000 and an all-year 'round population of 1,500, needs a doctor. Two drug stores and one doctor in town now. Address A. O. G., care Minnesota Medicine.

WANTED—Doctor who is looking for an opening. Good territory. For particulars write to Dent Commercial Club, Dent, Minnesota.

Minnesota State Medical Association

ANNUAL MEETING

October 12, 13 and 14, 1922

MINNEAPOLIS, MINNESOTA

MINNESOTA STATE MEDICAL ASSOCIATION
MINUTES OF THE FIFTY-FOURTH ANNUAL
MEETING HELD IN MINNEAPOLIS,
OCTOBER 12, 13 AND 14, 1922

PROCEEDINGS OF THE HOUSE OF DELEGATES

FIRST SESSION—THURSDAY, OCTOBER 12, 1922

The House of Delegates met in Room 214 of Millard Hall, University of Minnesota, and was called to order by the President, Dr. J. Frank Corbett, Minneapolis, at 2 P. M.

THE PRESIDENT: The House of Delegates will please come to order.

It is the function of this body to act upon various reports that will be submitted, but I feel at the present time that the medical profession should take an unusual interest in these reports, because many of them deal with our welfare. I think it is apparent to everyone that every state should have a definite organization made up of the component societies and that organization should give expression to the wishes and sentiments of its constituent members. It is important because I feel most of us realize that the medical profession is not held in as high esteem as it once was. We see our country districts filling up with all sorts of irregular practitioners, and they are creating a sentiment against the medical profession, and it is only through the efforts of organized medicine this sort of propaganda can be overcome.

I feel that it should be the purpose of this body to so consolidate the medical profession of Minnesota as to represent an organized front.

We will now proceed with the business of the House, and the first item on the program is the appointment of a committee on credentials. I will appoint Dr. A. Hedback, Minneapolis, and Dr. T. A. Peppard, Minneapolis, to serve on this committee.

We will proceed with the next item of business, which is the report of the Committee on Educational Propaganda,

which has been in a measure authorized by the Council and has been referred to this body for final action.

Before bringing this before the House of Delegates I will ask Dr. Pearce, who has been appointed chairman of the committee, to explain the functions and purposes of this committee.

DR. N. O. PEARCE (Minneapolis): The committee President Corbett refers to has just been organized and will consist of approximately 50 members. The idea of having this committee is to have, as nearly as possible, state-wide representation of the medical profession. In selecting this committee for the work we hope the committee will accomplish a great deal. We have tried to select a committee composed wholly of men who are actually engaged in the practice of medicine for a living. By that I mean we have not selected as members of the committee any of the profession who are engaged in work on a salary basis, such as those employed in large industrial institutions, or in public health institutions, or by the state. In other words, we want to crystallize the viewpoint of the practitioners who are actually dependent upon the number of people who come to their offices in order that they may make a living. The committee will be composed of men of this type from the Twin Cities and Duluth and one member from each of the 36 or 38 county societies. It is not hoped to have the Committee meet possibly more often than once a year or at the time of the next state meeting to discuss matters. It is the plan to circularize the committee frequently, together with the various counties, and have members from the local county society bring these matters up for discussion with the members of the different local societies.

As to the activities that the committee proposes to take up, we feel that there are two sides to the question to be considered. In the first place, I think all of the medical profession, especially that part of the profession whose practice of medicine is purely for a living, getting their compensation from the actual practice of medicine, are coming to feel that the whole profession is becoming more or less restless under the present widespread activities of the various public health organizations which have grown so rapidly since the war.

When we discuss the activities of these organizations we have to think, first, of those organizations which are active

in the larger cities and again we have to think of those state organizations which have a state-wide public health campaign. A few years ago all the public health activities carried on in the cities were dependent upon money raised by direct solicitation of the people of these organizations who were carrying on the work, consequently the activities of these organizations were greatly curtailed because of the anxiety of everyone selling their activity to the public at least once a year to raise funds. That condition has changed in the last two or three years and all of the larger cities, at least two or three of them, have adopted what is called a Community Chest. This has placed the public health activities of our various communities on a different basis from what they were before. Instead of the various organizations finding it necessary to spend their time in raising funds to carry on the work and selling their particular brand of health to the public, this money is raised in large sums by organizations of business men and very good salesmen, who practically assess each member of the community a certain sum of money which is paid into the Community Chest and distributed to the various public health organizations of the state.

Today we have in these organizations a tremendous machine for public health activities. In these machines there are some of the most brilliant and well educated people in the community. Activities of these organizations are becoming much wider, and as they build up, the people who originated or founded these organizations have kept away until today these organizations are largely in the hands of the employees who have had the organizations built up. We see, in analyzing that situation, that there are very few medical men who are actually depending primarily or possibly entirely for a living on the practice of medicine. There are very few of our profession who are represented on the boards. They are usually public health officials or employees drawing salaries and are not dependent upon the practice of medicine for a living. That is one of the things I think we should take into consideration. On the other hand, in our state organization we have now, particularly along the line of the medical profession of the state, there is a tremendous amount of confusion as to the various public health campaigns that are being carried on by these organizations, largely in the state field. There are, at least, six or possibly seven Boards or Welfare Committees of some type or other in every county in the state, and it has been my experience that the average man in the practice of medicine has little idea of what these boards are or what their aims are.

One of the duties of this committee of 50 is to try and educate the profession in the state as to the various activities going on in public health campaigns. We want to canvass all the different organizations, get them together and furnish a statement of what they hope to accomplish, and let us in turn pass them on to the various men who are in actual practice in order to let them know exactly what is going on about them in the public health line so that they can co-operate for the benefit of the profession. The way these things can be best handled by any organization in the state is through a public health campaign that has a direct bearing on the practice of medicine. We should have representation on these boards sufficient so that we can supervise the activities. I feel the public

health activities should be in control of the profession of the state, not, as it is today, rapidly drifting into the control of people who are professional public health workers without the viewpoint of the medical practitioners at large. We want in some way to get to the public the knowledge of what the medical profession means. We want to educate the public up to the point where they can draw some comparison between the chiropractor, the Christian Scientist, the osteopath and the physician who is regularly licensed and educated and competent to practice medicine. We do not hope to accomplish this by going out with a brass band, but we should try to get some sort of public vehicle by which we can go directly to the lay people as well as the profession, and give them detailed information through some organ or journal which will have a good influence on both the people and the medical profession. I think we should put out the same type of reading material that Dr. Evans publishes in the News Syndicate. He picks out the things that are good and puts them in plain English so that anybody reading what he writes can understand it. We should teach the lay people of the state something of what the University means, something of what it means to students who spend all these years in the study of medicine in order to qualify themselves in the community as licensed practitioners of medicine.

We have been able to make arrangements for a state-wide public health program through the Minnesota Public Health Association, to be put on for the benefit of the public and for the professional education in this coming year, which has for its purpose a better understanding between the lay people and the profession. This includes both the nursing and the dental professions. The way it is proposed to be done is this: This association has for years been publishing a Health Journal which has a wide circulation and which has been going to the lay people as well as to the physicians. If something can be done to resurrect this journal from its present position and make it a real health journal, and the material going into it largely censored and supervised by a committee or some sub-committee, to see that we are carrying the right kind of information to the public, we will try to work up a wide circulation among the lay people at a nominal price. We want the medical profession to take the journal because the various phases of public health activities are getting their publicity in this journal. The Minnesota Public Health Association depends for its resources on the sale of Christmas seals. If the sale of Christmas seals is as successful this year as it has been in the past, the officers of that organization will be able to put this journal on its feet to carry a real medical message to the public. In other words, we will try to make the journal a public vehicle for the medical profession in the state.

THE PRESIDENT: The Chair will now entertain a motion to receive the recommendation of the Council which is simply up for final confirmation by this House of Delegates.

DR. W. A. JONES: I would move that this committee of 50 that has been endorsed by the Council be recommended to carry on their activities by the House of Delegates; that they be further endorsed and be endowed with whatever is needed to bring it before the people.

My idea is that we as doctors are losing ground; that we need more publicity ourselves; that it is necessary for

us to get in closer touch with the communities, and unless we do that we are going to meet with a great deal of obstruction. We need publicity in the daily press, in the county papers, and that is going to be a most hazardous thing to undertake. It is quite evident to many of us that the daily papers are not in sympathy with the medical profession. Just why no one knows; but if it is backed by some organization of this kind we can get sufficient endorsement by the press to carry this thing over. For that reason I hope the House of Delegates will stand by this committee and endorse it and endow it with its favor.

Seconded and carried.

The Committee on Credentials reported that 47 delegates had registered and were entitled to seats in the House of Delegates.

On motion, the report was accepted.

The following delegates constituted the House:

SOCIETY	DELEGATES
Blue Earth County.....	Dr. H. J. Lloyd, Mankato
Blue Earth Valley.....	Dr. Geo. W. Dewey, Fairmont
Camp Release Dist.....	Dr. E. M. Clay, Renville
Carlton County.....	Dr. F. W. S. Raiter, Cloquet
Central Minnesota Dist...	Dr. H. C. Cooney, Princeton
Clay-Becker.....	Dr. O. J. Hagen, Moorhead
Dodge County.....	Dr. O. Flores, Dodge Center
Hennepin County.....	Dr. W. A. Jones, Minneapolis
	Dr. A. E. Hedback, Minneapolis
	Dr. R. R. Knight, Minneapolis
	Dr. T. A. Peppard, Minneapolis
	Dr. F. L. Adair, Minneapolis
	Dr. C. W. Pettit, Minneapolis
	Dr. J. C. Litzenberg, Minneapolis
Houston-Fillmore.....	Dr. O. F. Fischer, Houston
Kandiyohi-Swift.....	Dr. C. L. Scofield, Benson
Lyon-Lincoln.....	Dr. R. L. Vadheim, Tyler
Mower County.....	Dr. C. C. Leck, Austin
Nicollet-LeSueur.....	Dr. J. E. LeClerc, LeSueur
Olmsted County.....	Dr. D. F. Hallenbeck, Rochester
	Dr. H. Z. Giffin, Rochester
	Dr. A. H. Logan, Rochester
	Dr. George Steven, Byron
	Dr. V. C. Hunt, Rochester
Ramsey County.....	Dr. E. W. Buckley, St. Paul
	Dr. J. A. Cameron, St. Paul
	Dr. L. W. Barry, St. Paul
	Dr. F. J. Plondke, St. Paul
	Dr. P. Cook, St. Paul
	Dr. F. J. Savage, St. Paul
Red River Valley.....	Dr. P. F. Melby, Thief River Fls.
Redwood-Brown.....	Dr. J. C. Rothenburg, Springfield
Rice County.....	Dr. F. U. Davis, Faribault
St. Louis County.....	Dr. W. A. Coventry, Duluth
	Dr. C. L. Haney, Duluth
	Dr. N. H. Gillespie, Duluth
	Dr. O. W. Parker, Ely
Scott-Carver.....	Dr. H. W. Reiter, Shakopee
Southwestern Minnesota..	Dr. F. G. Watson, Worthington
	Dr. A. G. Chadbourn, Heron Lake
Stearns-Benton.....	Dr. W. L. Beebe, St. Cloud
Upper Mississippi.....	Dr. P. M. Hall, Ah Gwah Ching
	Dr. G. I. Badeaux, Brainerd
Waseca County.....	Dr. H. A. Miller, Waseca
Washington County.....	Dr. J. W. Stuhr, Stillwater
West Concord.....	Dr. Chas. E. Caine, Morris
Wright County.....	Dr. C. L. Roholt, Waverly

THE PRESIDENT: The next item is the reading of the minutes of the last meeting of the House of Delegates by the Secretary.

THE SECRETARY: The minutes of the 1921 meeting were published in the October (1921) issue of MINNESOTA MEDICINE and have been transferred to the Secretary's book.

There have been a few corrections made in the matter of initials; otherwise the minutes are correct. It would take a long time to read these minutes, but it seems to me a motion would be in order to dispense with the reading of them and that they be accepted as corrected.

DR. JENNINGS C. LITZENBERG: I move that the minutes be accepted as printed and corrected.

Seconded by Dr. Workman and carried.

THE PRESIDENT: The next item is the annual report of the Attorneys for the Association which will be read by the Secretary. The Secretary read the following report:

ANNUAL REPORT OF ATTORNEYS

Dear Doctor Drake:

You have requested it, and we make report to the Association covering the work done by us during the year last past.

Miner v. Helland and Nelson. The claimed malpractice in this case was in the reduction of a fracture of the tibia and fibula. We procured a dismissal of the action without adverse verdict or payment on the part of Drs. Nelson and Helland.

Hanson as Admr. v. Schlutz, et al. This action is pending in Hennepin County and is brought against Dr. Frederick W. Schlutz and Dr. F. H. Poppe and the Asbury Hospital to recover damages on account of the death of Lillian Hanson, a child, following an operation for pleural empyema.

Hogan v. Kohler, et al. The claimed malpractice in this case arises out of a mastoid operation and the treatment thereof with the result that a brain lesion followed and epileptic fits. We procured a dismissal of the action in Court without adverse verdict and without payment on the part of Drs. Kohler and Kirmse.

Seifert, et al. v. Minnesota State Medical Association. This action is brought by Drs. Seifert and Gleysteen and others similarly situated, members of the Brown-Redwood County Medical Association, to annul the revocation of the charter of said Medical Society and the alleged wrongful suspension of the members, and to require a reinstatement of the charter and the memberships. The action has been heard in a preliminary way, but no decision on the merits.

A special report will be made on this case separately.

Kuslin v. C. W. More, W. S. King, J. G. Saam and More Hospital. The alleged malpractice in this case is burning patient with a hot water bottle in a confinement. We appeared for Dr. J. G. Saam and procured a dismissal of the action on the merits.

Byers v. Wittick (2 cases). The alleged malpractice in this case is in performing an illegal abortion and failing to properly treat the same. We procured a dismissal on the merits.

H. A. Byers v. Wittick. This is a companion suit to the foregoing brought by the husband and was disposed of in the same way as the foregoing case.

Backlund v. Frank E. Burch and Charles E. Connor. The alleged malpractice in this case is in severing the facial nerve or its branches resulting in facial paralysis in mastoiditis. The action is still pending and undisposed of.

Preston v. Schneider. The alleged malpractice in this case is an x-ray burn of the abdominal wall in the course of treatment of fibroids of the womb. The action is still pending.

Brewster v. Beals. The alleged malpractice in this case is in the reduction of a fracture of the wrist and hand. The action is still pending.

Schlutz v. Lockwood. This suit was brought to recover professional fees with a counter-claim charging malpractice in the treatment of a child suffering with a peculiar congenital defect and unable to swallow food. The counter-claim has been dismissed on the merits.

Flynn v. O'Hara. The charge of malpractice in this case is in producing lacerations with resulting infection in the

treatment of Manda Flynn in childbirth. Action is still pending.

Shepardson v. Farrage. The alleged malpractice in this case is in producing a laceration in an operation for vaginitis. We procured a dismissal of the action on the merits, and it is finally disposed of.

Godtland v. Stewart. The alleged malpractice in this case is in advising and permitting the administration of chloroform in the extracting of teeth, the condition of the patient being such that only nitrous oxide could be administered, resulting in the death of the patient. Two cases are pending, one covering the death case, and the other the loss to the husband, and expenses. The actions are pending.

Graneth v. Bowers. The alleged malpractice is in producing a burn in the use of the x-rays in exploring to determine the cause of hemorrhage in the stomach. The action is still pending.

Walrath v. Hammermeister. The alleged malpractice in this case is in injecting ether into the leg of patient thereby causing injury to the sciatic nerve, leaving the patient in a crippled and paralyzed condition. The patient was suffering from pains in the leg. There is also a companion suit brought by the husband. The actions are still pending.

Krueger v. Bossingham. This action is still pending and is brought by the husband to recover certain expenses consequent upon the alleged malpractice in the treatment of his wife who died from septicemia arising out of childbirth.

Singer v. Bossingham. This case is still pending, and the alleged malpractice is in failing to remove the afterbirth and in introducing a septic condition which resulted in focal infection with a crippled condition of the arm. We won the case on a trial thereof, but a new trial has been ordered.

Krueger, as Adm., v. Bossingham. In this case we suffered a defeat, and the Supreme Court affirmed a verdict of \$5,000.00 against Dr. Bossingham based on his negligence in not caring for a septic condition consequent upon childbirth, resulting in the death of Mrs. Krueger, who left a husband and eight children.

Farr, v. Burns and Folken. The claimed malpractice in this case is in failing to reduce a fracture of the neck of the femur in reducing a fracture of the tibia and fibula. The action is pending.

Conferences with Secretary. There have been several conferences with the Secretary, Dr. Carl B. Drake, regarding matters of interest to the Association.

Austin Clinic—Mankato Clinic. Several questions have come up regarding the legal relations consequent upon clinics organized as the Austin Clinic and the Mankato Clinic.

Very truly yours,

MOORE, OPPENHEIMER, PETERSON & DICKSON.

By Geo. W. Peterson.

October 3, 1922.

Dr. Carl B. Drake, Secretary,
Minnesota State Medical Association,
St. Paul, Minn.

Dear Sir: Annual Report in re Seifert et al. v.
Minn. State Medical Association.

This case is a petition brought by members of the Brown-Redwood County Medical Society for a peremptory writ of mandamus requiring the State Medical Association to restore to the Brown-Redwood Medical Society its charter, which was revoked by the action of the House of Delegates at its annual meeting on August 28, 1918.

The case came on for trial last winter and was submitted to Judge Catlin for decision. Judge Catlin determined that the suit involved the interest of the Redwood-Brown County Medical Society, to whom a charter covering the territory formerly occupied by the Brown-Redwood County Society had been granted, after the revocation of the latter's charter, and was in effect a collateral attack on such new charter and that therefore the new Redwood-Brown Society should have made a party to the suit and given a chance to defend its charter.

An order joining the Redwood-Brown Society was entered and served and this firm appeared for and interposed an

answer for the new society and the case is now set down for trial on October 26, 1922.

There have been some overtures for a settlement of this controversy by dividing the district and permitting a society in Brown County with provision that physicians in Brown County who do not care to affiliate with members of Brown County be permitted to join the Redwood County Society, and vice versa.

There is no provision of the constitution of the Association regulating the membership of county societies. While the by-laws do not in express terms require that component county societies be composed of physicians resident in such counties, yet this requirement seems to be implied to some extent by Section X of Chapter IV and Section IV, Chapter VII of the By-laws.

Any adjustment of the controversy along the lines above indicated would not therefore require any amendment of the constitution but might require an amendment of or supplement to the by-laws.

By Chapter XII of the By-laws it is provided that they may be amended at any annual session by a majority vote of all delegates present at that session, after the amendment is laid on the table for one day.

As to the legal merits of this controversy, we are not sanguine that we can sustain the Association's position. It is a doubtful proposition. There are two vital questions:

1. Whether or not the conduct of the Brown-Redwood County Society in relation to the trial of Dr. Fritsche complained of was in conflict with the letter or spirit of the constitution and by-laws; and
2. Was the revocation void for lack of notice to the society that their conduct had been challenged in this respect and failure to grant an opportunity to be heard in their own defense?

We have contended that the Brown-Redwood County Society's conduct in reference to the request to try Dr. Fritsche was not only a failure to try him but a practical endorsement of his attitude toward the government; that loyalty to the government is an implied provision of any corporation enjoying privileges under the government and that therefore the Brown-Redwood County Society's conduct in reference to this matter is in conflict with the spirit of the Association's constitution and sufficient to justify a revocation of the charter. There is no other legal ground upon which the revocation can be justified and it is a doubtful question whether this is sufficient.

As to the second question, we have contended that inasmuch as the revocation proceedings were had at the regular annual meeting provided for by the constitution and fixed a year in advance by the House of Delegates at its preceding annual meeting and of which the Brown-Redwood County Society had due notice, there was sufficient notice.

The case will again be brought on for trial on October 26th and if anything is to be done in the way of amicable adjustment of this matter it should be done at the ensuing annual meeting.

Yours very truly,

MOORE, OPPENHEIMER, PETERSON & DICKSON.

By Frederick N. Dickson.

This report was divided into two sections.

Dr. Litzenberg moved that the first part of the report be received and placed on file.

Seconded and carried.

Regarding the second part of the report Dr. W. A. Jones moved that the report as presented be either the subject for a judgment or trial.

Seconded by Dr. Workman and carried.

THE PRESIDENT: The next item is the report of the American Medical Association delegates, Dr. W. H. Magie and Dr. J. W. Bell.

DR. MACIE presented the report as follows:

REPORT OF PROCEEDINGS OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION AT ST. LOUIS—1922 SESSION

To the President and Members of the House of Delegates, Minnesota State Medical Association:

In response to the request of the President of this association, I beg leave to make the following report of the transactions of the House of Delegates of the American Medical Association:

The House of Delegates met in the St. Louis Medical Society Building, St. Louis, Missouri, Monday morning, May 22nd, and was called to order at 10:00 o'clock A. M. by its speaker, Dr. F. C. Warnshuis. The House then listened to a report of the Committee on Credentials; this revealed that a quorum was present.

The President, Dr. Hubert Work, was called to the chair, who presided while the speaker delivered his address. The most important features of the speaker's address only will we touch upon.

The Education of the Public regarding scientific medicine was advocated. Through our failure to inform the public through proper and well organized channels the public have a misconception of our ideals and that our aim is to serve them by preventing disease as well as the cure of disease and at the same time convince them that medicine is an altruistic profession. The consideration of the public welfare is the first thought and the patient's welfare secondary, when the public welfare is menaced. Health insurance came in for the usual consideration as well as the so-called clinics and group practice. Health insurance is opposed most vigorously by Dr. Warnshuis. The so-called group practice comes in for consideration also; to quote the speaker, "Some of them merit endorsement; others, however, require our emphatic and perhaps drastic denouncement."

The next in order was the address of the President, Dr. Hubert Work. In speaking of the organization he referred to the group that have from time to time been leveling criticism at the organization as being run by a few individuals. He has the following to say and I believe those who have been active in the affairs of the Minnesota State Medical Association will agree with Dr. Work when he says, "This association and all others, even the National Government, is directed by a few men for the principal reason that there is no other way to do it." The growth of the association from 8,000 twenty years ago to 89,000 now, is sufficient answer to the criticism, according to Dr. Work.

Dr. Work says, in speaking of the Code of Ethics, "We are united as a professional body and under our code, but our tendency for each to go his own way is, I think, unfortunate. We cannot change our code if we would. We may change our interpretation of its application, for it is elastic, and applicable to any trade or profession, but its principle is a fundamental of civilization and governs all ethical human conduct. Its moral aspect is the Golden Rule, and its business phase is that of fair dealing. There can be no professional cohesion without it."

Medical ethics was discussed very extensively during the meeting both officially and on the side among the members. Several amendments have been submitted for consideration of the House of Delegates among which the following was adopted: The following amendment to Article I, Chapter II, Section 4, of the Principles of Medical Ethics, is suggested by the Judicial Council and was adopted:

"Solicitation of patients by physicians as individuals, or collectively in groups by whatsoever name these be called, or by institutions or organizations, whether by circulars or advertisements, or by personal communications, is unprofessional. This does not prohibit ethical institutions from a legitimate advertisement of location, physical surroundings and special class—if any—of patients accommodated. It is equally unprofessional to procure patients by indirectness through solicitors or agents of any kind, or by indirect advertisement, or by furnishing or inspiring newspaper or magazine comments concerning cases in which the physician has been or is concerned. All other like self-laudations defy the traditions and lower the tone of any profession, and so are intolerable. The most worthy and effective advertise-

ment possible, even for a young physician, and specially with his brother physicians, is the establishment of a well-merited reputation for professional ability and fidelity. This cannot be forced, but must be the outcome of character and conduct. The publication or circulation of ordinary simple business cards, being a matter of personal taste or local custom, and sometimes of convenience, is not *per se* improper. As implied, it is unprofessional to disregard local customs and offend recognized ideals in publishing or circulating such cards.

"It is unprofessional to promote radical cures; to boast of cures and secret methods of treatment or remedies; to exhibit certificates of skill or of success in the treatment of diseases; or to employ any methods to gain the attention of the public for the purpose of obtaining patients."

We next listened to the president-elect. In his address he commended the provision as a wise one whereby he, who has been chosen as president of the American Medical Association, shall for one year prior to his induction into this high rank, serve as president-elect. This gives him an opportunity to better acquaint himself with the duties of his office, etc., before taking the responsibility that will later be put upon him.

He also discussed the Council on Pharmacy and Chemistry, the Council on Health, the Council on Medical Education with his characteristic clearness of expression. His address contained no special reference to many of the important problems, for example, State Medicine, Community Hospital, Group Clinics, etc., not because of any unwillingness to discuss them, but to avoid repetition as either they shall be touched upon on another occasion or because they form a part of other addresses.

FELLOWSHIP

Fellowship has a net increase during the past year of 2,052, being a total on May 1st, 1922, of 53,022.

DEATH OF DR. DWIGHT H. MURRAY

Since the last meeting of the House of Delegates, its speaker, Dr. Dwight H. Murray, died at his home in Syracuse, N. Y. He had represented the State of New York in the House of Delegates since 1910 and until he was elected speaker. He was vice speaker from 1916 until 1920.

Pay Clinics, Diagnostic Clinics came in for a good deal of discussion. The Board of Trustees recommend a survey of Pay Clinics, Diagnostic Clinics and Group Practice; as these matters include both ethics as applied to Hospital Clinics and Group Practice, this work should be conducted jointly by Judicial Council and the Council on Medical Education and Hospitals.

LAY MAGAZINE

Arrangements are being made for the publishing of a lay magazine. This magazine will be devoted to the instruction of the lay public upon medical matters of public interest. For many reasons, Washington, D. C., is probably the most desirable location for its publication. We hope by publishing it in Washington that it might have some influence of a political nature with Congress. Advertising medical institutions came in for quite a lot of discussion. The question of ethics as applied to medical institutions such as incorporated groups or other institutions of medical nature. Ethics relates to conduct and the consensus of opinion is that the same principle of conduct applies to these institutions or groups that apply to individual practitioners. The general opinion of the delegates is that the keystone of medical profession is the general practitioner. This being so, the general practitioner must be protected or the whole superstructure will fall into a mass of ruins unless his support is continued. He must not be belittled by the modern cry that has become so popular of late for the specialist, who is in many cases a self-styled specialist and has no special knowledge or even ordinary knowledge of the said specialty. There was quite a general agreement that specialists should be developed by a process of evolution instead of ready-made by medical colleges, in other words he should have some years of experience as a general practitioner before taking up the practice of specialty.

MEDICAL SCHOOLS

Medical Schools received a good deal of discussion and many problems concerning their welfare were discussed. Some of their problems are as follows:

- (A) Medical schools are finding it necessary to limit the enrollment of students.
- (B) The cost of furnishing medical education has been tremendously increased.
- (C) There is an increasing trend toward specialization and group practice of medicine.
- (D) There has developed a complaint regarding the lack of general practitioners especially in the poorly settled or rural districts.
- (E) There is a rapid increase in the number of hospitals which brings a greater demand for internes than can be supplied from recent medical graduates.

Resolutions condemning the Sheppard-Towner law was passed. Also resolutions protesting the unnecessary restrictions placed upon the medical profession by the Harrison Narcotic Law.

Thursday afternoon, May 25th, the House of Delegates reconvened for the Election of Officers. Dr. Lyman Wilbur of California was elected president of the A. M. A. Dr. Frederick Warnhuis was elected speaker of the House of Delegates. San Francisco was selected as the next place of meeting; then the House adjourned.

W. H. MAGIE, *Delegate*.

THE PRESIDENT: This is a very important report and I think it concerns many things that vitally interest the welfare of the profession, and I believe it might be proper for this House of Delegates to offer certain resolutions as suggestions to the delegates for the next meeting. Some of these things that have been hinted at at the present time are covered by another report, namely "An Examining Board for Cults" is the subject of a special report. "Medical Education" will be the subject of another special report. That leaves two things in this report of Dr. Magie's that are not coming up unless brought up for special action. I refer to the question of a lay journal. Things are hopelessly delayed in regard to the publication of a lay journal and it seems to be indefinitely in the future. It might be well for a resolution to be introduced giving an expression in regard to sentiments concerning ethics.

Before putting the motion for the adoption of this report the Chair will be glad to hear the sentiments of the House of Delegates in regard to these two points; first, in regard to the publication of a lay journal.

DR. E. W. BUCKLEY: As our ideas on this subject are a little hazy I think it would be well to refer this report to the Committee on Resolutions, who will give it a careful consideration and bring before this body such resolutions as may cover the subject. I move, therefore, that the report be referred to a special committee on resolutions with instructions to bring in a report for the consideration of this body at its meeting on Saturday.

Seconded and carried.

THE PRESIDENT: What action do you wish to take in regard to the report of the delegates as presented?

DR. W. A. JONES: I move it be accepted and placed on file.

Seconded and carried.

Dr. F. J. Savage, Chairman, St. Paul, presented the report of the Committee on Public Policy and Legislation as follows:

REPORT OF THE COMMITTEE ON PUBLIC POLICY AND LEGISLATION

The work of this committee this year has chiefly been one

of preparation for the coming year of active legislation. Twenty-seven, or 71 per cent, of 38 of the component County Medical Societies have organized county society committees on legislation. It is with regret that we announce that after repeated attempts we have been unable to secure local committees on legislation in the following counties:

- | | |
|-------------------------------|------------------|
| 1. Aitkin | 6. Chisago-Pine |
| 2. Carlton | 7. Dodge |
| 3. Camp Release District | 8. McLeod |
| 4. Central Minnesota District | 9. Meeker |
| 5. Clay-Becker | 10. West Central |

11. Wright

We have taken steps to secure the co-operation of the pharmacists and dentists of the state through their committees on legislation. This co-operation has not yet been definitely assured. Early in 1922 the Council of the State Association voted to allow this committee \$300.00 for its work. About \$42.00 of this has been spent up to October 1st. During the legislative year this committee should have at least \$500.00 available. The Executive Secretary of the State Association has furnished the service of a stenographer without charge.

The committee has furnished literature on State Medicine, Osteopathy and Chiropractic to all county society committees on legislation.

If this House of Delegates votes to attempt to pass the proposed Basic Medical Practice Act, it will be the function of this committee during the remainder of the year to see that copies of the proposed law are promptly distributed to the local committees on legislation and their function to see that all members of the Senate and House are properly approached on this matter before the Legislature convenes and to be prepared for the prompt introduction of this bill in both Senate and House.

The County Societies are urged to retain the same personnel on this local committee on legislation until the end of the coming session of the Legislature.

F. J. SAVAGE.

THE PRESIDENT: We should not pass over lightly the work of this committee. I appreciate the work Dr. Savage has done in the organization of these county committees, and it is up to these county committees to get busy in order to see that the interest of the legislators is aroused in behalf of the medical profession and to make friends in their communities. It is but a short time before the Legislature meets. It is an important committee and everyone should co-operate with Dr. Savage in putting this enormous job across.

The Chair will entertain a motion to dispose of this report.

DR. SAVAGE: I would like to quote from a letter I received from one of the members of the House of Representatives as showing the viewpoint of the members of the Legislature on matters pertaining to medicine and as an incentive for this committee of 50 to get busy. I asked him for the names of twelve men whom he considered the strongest men in the House and he said he was unable to choose from a list of twenty-four, which he sent me. I checked up the votes on the Osteopathic Bill, which failed to pass by six votes, and of the twenty-four strongest men in the House, twelve voted for the Osteopathic Bill, ten voted against it and two failed to vote. That shows a narrow margin.

THE PRESIDENT: The average layman does not get our viewpoint of what the sick public ought to have, the qualifications that are necessary. He thinks we are a medical trust. It is only through organization and through self-sacrificing work of the profession that the future generation of doctors will be benefited.

There is a letter from the Secretary of the Minnesota

Dental Association which I will ask the Secretary to read.

The Secretary read the following communication:

Minneapolis, Minnesota.

October 6, 1922.

Dr. F. J. Savage, Chairman,
Committee on Public Policy and Legislation,
Central Bank Bldg., St. Paul, Minn.

Dear Doctor: Your letter of July 11 last has remained unanswered since there have been no committee meetings of our association during the summer.

We wish to be further enlightened as to just what you would like us to do in the way of aiding and co-operating with you in matters pertaining to legislation. If you feel that it would be well to have a committee appointed to act with you it would indeed be a pleasure to assist you in any way we can. We expect to propose some measures to the coming legislature and no doubt any help we could get from you would be very highly appreciated.

Will you therefore kindly give us any further information or suggestions which might lead to a closer co-operation.

Very truly yours,

C. H. TURNQUIST,

Secretary.

THE PRESIDENT: What action do you wish to take on the report of Dr. Savage?

DR. W. A. COVENTRY: I move that the report be accepted and placed on file.

Seconded.

DR. E. W. BUCKLEY: I move to amend that the report be accepted and the present committee be continued.

The amendment was seconded and accepted, and the original motion as amended was put to a vote and carried.

DR. W. A. DENNIS, St. Paul, presented the report of the Committee on Social Insurance as follows:

REPORT OF COMMITTEE ON SOCIAL INSURANCE

It is not the purpose of the present Committee on Social Insurance to make an exhaustive report on the subject. The reports of former committees have shown the origin and outlined the growth of the idea in other countries. The subject is a very large one and a reasonable familiarity with it can be acquired only as the result of a rather extensive line of reading. Compulsory health insurance has been in force in some countries in Europe for a good many years. Agitation for its adoption in the United States is comparatively recent. It has not as yet been put in force in any of the states, although bills providing for it have been introduced and failed of passage in several legislatures, and in numerous states commissions have been named to study and report on its operations. Its chief exponent has been the American Association for Labor Legislation, the officers of which include some of the best known Socialists of the country. The American Federation of Labor, whose membership might naturally be among the chief beneficiaries of such a system, has gone on record as absolutely opposed to it. The medical profession in this country, as has been uniformly the case abroad, is overwhelmingly against it. Nevertheless, the Council on Health and Public Instruction of the American Medical Association has issued a number of pamphlets on the subject, taking the position that either State Medicine or Compulsory Health Insurance is inevitably coming and that the best the medical profession can do is to take a hand in the proceedings in the effort to make them no more objectionable than is absolutely necessary.

The theory on which this class of insurance is advocated is that there is always a certain varying percentage of the people whose circumstances are such that they are unable to obtain proper medical care, and statistics have been collected to show what numbers of persons taken ill do not call a physician, the presumption being that they are unable to do so.

It is undeniably true that illness, particularly if severe or

prolonged, falls as a heavy burden on men or women working at common labor. In this country, under ordinary conditions, skilled labor is able to meet its obligations if it has the will to do so. Common labor very generally does so, and, when it cannot, agencies of the kind already provided, it seems to us, are better adapted to its care than compulsory health insurance. It is freely admitted by those advocating this new form of socialism that serious defects have been found wherever it has been tried, but they hope to correct them if and when it is introduced here.

We believe that this class of legislation is undesirable for the following reasons:

1. Service of an uncertain character and in an indefinite amount, when contracted for at a fixed sum, is always rendered in a perfunctory and unsatisfactory manner, and this has been true both in Germany and England, and also very generally of voluntary club practice in this country. The voluntary form, however, is much less objectionable than the compulsory, since the arrangement may be terminated if desired. When once it has been established by law, and so becomes subject to the play of politics, it is next to impossible to get rid of it.

2. The system as established in England, Germany and elsewhere, is, and must of necessity be, complicated and cumbersome, involving a cost of administration and clerical waste for which there is no adequate return.

3. No one has claimed that, if introduced, it would make superfluous the agencies already established for the care of the unfortunate or thriftless, such as city hospitals, insane hospitals, tuberculosis sanatoria and the like.

4. On the profession of medicine, the most essential, and always an unwilling factor in its establishment, the effect is deadening. The panel doctor must do his work in a hurried and superficial manner if he is to make a living at the low rates paid. Much of his time must be given to the making of reports and other purely clerical offices. If the entire profession were to become engaged in this class of work medicine would soon sink below the level of the trades. We are told that in Germany there has been a decided deterioration since the introduction of compulsory health insurance, and that the healing art no longer attracts the best minds.

5. The enormous funds necessary to carry on the work, when conducted by the state, a tempting political plum and tend toward the further corruption of politics (it is interesting to note, too, that all of the funds, voluntary or state, in England and Germany, are insolvent; if called upon to cancel their obligations they could not do so). History has abundantly and universally demonstrated that those functions only should be entrusted to government that cannot be done otherwise, and most of these are concerned with the "preservation of liberty and of rights"; in other words, police powers in a broad sense. All others are more efficiently and economically administered under private initiative and direction. It must never be forgotten that government has no funds except those that it takes from the people in the form of taxes, and whether it contributes a third or a fifth to compulsory health insurance funds, or a half to maternity benefits (Shepard-Towner Law), it can only do so because of having already collected it from the supposed recipients. A sufficient multiplication of such functions means autocratic government, whatever the name under which it functions, and the present tendency in this country is toward such multiplication.

6. The effects upon the recipients of such so-called benefits are no less undesirable than those upon the government making them. Self-reliance and, in consequence, self-respect, are gradually undermined and the individual comes to believe that frugality and thrift are lost virtues, and that no matter what happens, the government will take care of him. As a matter of fact, in those countries where compulsory health insurance has been adopted, this has been shortly followed by funeral, old age, maternity, and finally by unemployment insurance, than which it would be difficult to devise anything more pernicious.

Your committee is not prepared to offer a solution of this question but advises its colleagues as members of a pro-

fession of which they are justly proud and which they do not wish to see degraded, and still more as citizens of the best country and which they wish to keep the best, to be prepared to meet this menace wherever it shows itself. For it is going to show itself persistently. "Social welfare" is no longer a purely philanthropic proposition. It has become a distinct profession. The universities, our own among them, offer courses in it. It has become a means of making a living, and is becoming rapidly a better and better one. So much so that it is difficult to escape the conviction that many of our philanthropic organizations have fallen under the domination of their paid employees.

It has never been the habit of America to turn a cold shoulder upon the unfortunate and afflicted, and it will not do so in the future, but it is not possible, nor would it be wise, if possible, for the state to attempt to insure its citizens against their own human limitations.

W. A. DENNIS, Chairman,
ARTHUR N. COLLINS,
CARL HOLMAN.

THE PRESIDENT: You have heard this report. What disposition do you wish to make of it?

DR. J. F. SAVAGE: I move that the report be endorsed and placed on file.

Seconded and carried.

THE PRESIDENT: I am going to appoint as a Committee on Resolutions Dr. E. W. Buckley, Dr. W. A. Giffin, and Dr. W. A. Dennis.

DR. H. P. RITCHIE, St. Paul, presented his report as a member of the National Executive Council as follows:

REPORT OF MEMBER OF NATIONAL EXECUTIVE COUNCIL

The Annual Congress of Medical Education, Licensure, Public Health and Hospitals was held in Chicago, March 6-10, 1922.

The proceedings were reported in detail in the Journal of the A. M. A. as follows:

March 11, 1922. Pages 735-740.

March 18, 1922. Pages 811-822.

March 25, 1922. Pages 898-902.

April 1, 1922. Pages 972-978.

SUBJECTS

1. A Constructive Program—discussing The teaching hospital; Time in medical curriculum.

2. Problems Resulting from Recent Improvements in Medical Education—discussing Expense in conducting medical schools; Limitations of students; Specialization; Group clinics; Hospitals; Supply of internes; Shortage of physicians.

3. What subjects, if any, should be transferred to Graduate Medical School?

4. A New Curriculum—discussing The function of hospital in medical education; Student internship; The fifth year requirement for graduates; Experiences at the "U" of Minnesota with interne year requirement; Professions and clinical professions of clinical subjects.

The excerpts show the trend of the work of Congress which extends to other subjects of Public Health and Licensure. A perusal of the men entering into the proceedings of this Congress, shows that the most prominent and active of the educators are considering in detail all of the many problems of teaching. While this body is without executive power the meeting is of inestimable value and interest as a clearing house of the best thought along these lines.

It surely is a privilege to attend these meetings as a delegate.

HARRY P. RITCHIE, M.D.

THE PRESIDENT: You have heard this report. What do you wish to do with it?

It was moved that the report be accepted and placed on file.

Seconded and carried.

DR. H. M. WORKMAN, Chairman, presented the report of the Council as follows:

The meeting of the Council was opened at 10:15 A. M., October 12, 1922, by Dr. Carl B. Drake, secretary of the State Association, in the absence of Dr. R. J. Hill, president of the Council. All members, with the exception of Dr. Hill, were present, including Dr. C. E. Dampier, Dr. J. C. Millsbaugh, Dr. W. A. Dennis, Dr. H. M. Workman, Dr. F. R. Weiser, Dr. F. A. Dodge and Dr. W. F. Braasch. Dr. J. F. Corbett, president of the Association, and Dr. F. L. Beckley, treasurer, were also present. Dr. Workman was selected to act as chairman of the meeting and took the chair.

Dr. Corbett presented the matter of a legislative bill pertaining to the Examining Board determining the status of non-medical healers in the state. This bill was approved by the Council and permission was granted Dr. Corbett to bring this matter before women's organizations affiliated with the State Medical Association.

After a detailed explanation of the plans outlined for a new committee on State-wide Publicity by Dr. N. O. Pearce, who is to act as chairman of said committee, it was moved that the Council recommend to the House of Delegates the authorization of the State-wide Publicity Committee of fifty members.

The treasurer's report given by Dr. Beckley, the reports of MINNESOTA MEDICINE and that of the executive secretary, presented by Mr. J. R. Bruce, were read and approved by the Council.

The request made by the Carlton County Medical Society that their charter be rescinded and their members be allowed to join the St. Louis County Medical Society was granted, providing the action taken at the Carlton County meeting in regard to this matter was executed by a quorum of members. The secretary was to ascertain this fact.

Dr. Drake asked that some action be taken in regard to the matter of expense in the suit being brought by the Redwood-Brown County Society. It was moved and carried that defense in this suit be considered part of the same suit, it being the function of the state association attorneys to defend the suit.

The matter of the report concerning the collection and publication of the papers of the late Dr. Tomlinson was introduced by Dr. Drake in the absence of Dr. Holman, who sent in a statement by letter that the papers had been collected and indexed. Motion was made and carried that the Council recommend to the House of Delegates, the discontinuance of this committee, inasmuch as the publication of these papers lies with the local society.

Motion was made and carried that auditing be made this year of the financial condition of the state medical journal and the business reports, accountant to be approved by the executive committee of the Council.

Motion was also made and carried that the Council recommend to the House of Delegates that the American Medical Association delegates of this state be instructed to vote against any change being made in the constitution of the American Medical Association in regard to the attendance of sectional delegates to the meetings of the House of Delegates.

The formation of a Women's Auxiliary of the Minnesota State Medical Association to act in conjunction with and as a component part of the American Medical Association Women's Auxiliary was approved by the Council.

Motion was made and carried that the Council authorize the House of Delegates to appoint a committee to act as solicitors for the Gorgas Memorial Fund.

The Council adjourned to meet at 9 o'clock Saturday morning.

THE PRESIDENT: You have heard this report. What do you wish to do with it?

It was moved that the report be accepted and placed on file.

Seconded and carried.

The next item was the report of the delegation to assist in the collection and publication of the papers of the late Dr. Harry A. Tomlinson and in this connection the secretary read the following communications:

October 6, 1922. Report of the committee on the collection of the papers and writings of Doctor Harry Tomlinson, a former member of this Society.

Your committee has in its possession all of the papers and writings of the late Doctor Tomlinson, collected and indexed by Doctor H. D. Valin, who was associated with Doctor Tomlinson in his laboratory work for many years. The cost of publication of these papers will be around \$1,200 or \$1,500, depending on the number of volumes to be published.

As a member of your committee, the undersigned would beg to suggest that the Secretary of the Medical Society accept the collected writings, and that the committee be discharged. Signed (C. J. Holman).

October 12, 1922. To Dr. Carl B. Drake, Secretary, Minnesota State Medical Association, St. Paul.

Dear Doctor: The committee to advise as to the publication of Dr. H. A. Tomlinson's papers reports that the expense of publishing the papers is too great, and the publication of these papers by the State Society would establish a precedent that probably would not be wise. Signed (Aaron F. Schmitt, Chairman).

THE PRESIDENT: What do you wish to do with these reports?

DR. H. M. WORKMAN: I move that this whole matter be referred back to the Nicollet County Medical Society, and that that Society dispose of these papers.

Seconded and carried.

DR. GEORGE D. HEAD, Chairman of the Committee on Medical Education, presented the report of this committee as follows:

REPORT OF THE COMMITTEE ON MEDICAL EDUCATION OF THE MINNESOTA STATE MEDICAL ASSOCIATION

The committee on medical education of this society interprets its work as twofold, first, to represent this association in an advisory capacity when called upon to consider matters pertaining to medical education and, second, to express from time to time the ideas and convictions of the practitioners of this state upon the problems arising in the education of young men to practice the healing art.

It is not wise that the preparation of men for medicine should be left entirely in the hands of those who do the active teaching. Too close proximity to the work and lack of more direct contact with actual practice and with the profession and laity often gives a distorted vision, not only

of the requirements demanded of young men who choose medicine as a vocation, but also an inadequate conception of the end results of such instruction when viewed from a practical standpoint. The profession at large, speaking through this association, should exert a helpful influence upon and have a voice in shaping the educational policies of our Medical School, which has in its keeping the training of physicians. Engaged in the actual field of practice, the practitioner sees with a clearer vision the deficiencies as well as the strong elements in the training. He also has a chance to sense from a different angle the demands made upon the profession by the public in serving the health needs of the people. Any expression of this association, through its educational committee, should commend work in its judgment well done and should not hesitate to helpfully criticize deficiencies in the instruction in order that teachers, administrators, and governing boards may have for their guidance the opinions of practical men.

FUNCTION OF MEDICAL SCHOOL

1. The true function of a medical school supported by state funds rests in the preparation of young men to engage in the actual practice of medicine and surgery. The educational policies established and the energies of the teaching staff should, therefore, be centered in this conception of the scope of the work. Research and investigation, the preparation of men to do medical teaching and public health service are important avenues of instruction, but should not be allowed to overshadow or supplant or detract from courses established to prepare students for practice. Because of the effort to keep pace with the growth of the more scientific side of medicine, the courses of instruction offered today fail to sufficiently recognize and emphasize the value of instruction in the art of medical practice and also fail to give due weight to treatment for the relief of symptoms. This association, therefore, requests that the administrative board of the Medical School take up for consideration the fuller development of courses dealing with instruction in those finer personal qualities of heart and mind so essential to the management of the sick and, furthermore, courses in the treatment of disease and symptoms in their broader aspects, including mechanotherapy, hydrotherapy, massage, röntgenotherapy, dietetic management, etc.

LIMITED REGISTRATION

2. While it is true that the Medical School should not sacrifice quality for quantity, in the young men asking for admission, it is also very unfortunate that the school has been obliged to limit the size of its classes. The Medical School is in a strategic position as the only complete medical college between Milwaukee and the west coast. It should be able to accommodate not only those properly prepared students who reside in Minnesota but also such others as desire to obtain their medical education here.

To confine attendance to Minnesota residents tends toward provincialism, inbreeding and mediocrity. Men who come to Minnesota from outside are about as apt to settle here after graduation as are those who are born and raised in this state. Especially unfortunate is it if the State University cannot take all the state's own students who desire a medical training. This situation exists at the present time. Finally, the graduates of Minnesota have always settled chiefly in those states which are economically and socially linked up with this state.

This association recommends that this House of Delegates bring these facts to the attention of the Board of Regents and respectfully request the Board to add to the facilities of the Medical School as fast as possible so that larger classes may be accommodated and all properly qualified students from this state received, who apply for admission.

BUILDING NEEDS

3. The committee finds that Millard Hall and the Institute of Anatomy are crowded. There is no adequate space for the Medical Library. The Department of Pharmacology is in temporary quarters loaned by the Department of Physiology. There is no laboratory space for the

new Department of Preventive Medicine and Public Health. There is no space for the display and proper use of the wonderful museum possessed by the Department of Pathology. The Dispensary has outgrown its quarters. Another large lecture room is needed.

This association recommends to the Board of Regents that the missing wings of Millard Hall and of the Institute of Anatomy be added as soon as possible, in order to meet these pressing needs of the school.

The present method of support of the University Hospital is unfortunate in that the entire expense is thrown on the educational funds of the state. Elliott Memorial Hospital, supported by the state, is justified on humanitarian and broad economic grounds quite apart from its use for medical education. It would be an advantage if the so-called Iowa law could be enacted in this state. Under this plan the state treasury reimburses the University, month by month, for the expense of conducting the State Hospital and, therefore, this expense is not chargeable to University appropriations.

APPLIED KNOWLEDGE IN THE PRIMARY CHAIRS

4. The rapid development of knowledge covered by the primary chairs—atomy, physiology, chemistry, pharmacology, pathology and bacteriology—makes it most necessary that serious efforts be made to teach these subjects not only as pure sciences but in their true application to practical medicine. Careful consideration must be given to the subject matter presented to the students in order that instruction in the purely scientific side of these subjects may not entirely overshadow their applied relationship to the life work of the student. This, we believe, is a serious fault in medical teaching of the present day. Much unnecessary and relatively irrelevant instruction is included in some of the courses in the primary chairs which might better be omitted in order that students may have more time and strength for the acquisition of knowledge necessary to know in order to practice medicine intelligently.

This association, therefore, requests that the faculty of the Medical School consider most carefully the whole subject of primary chair instruction in its relation to practice, with the idea of strengthening the courses in their applied relations to medicine and surgery.

SHORT POSTGRADUATE COURSES FOR PRACTITIONERS

5. Next to the preparation of young men to engage in the practice of medicine, the chief function of the Medical School of the University of Minnesota is to offer its facilities to graduate and other practitioners of this state in order that they may avail themselves of the opportunity offered from time to time to review courses in which they feel themselves deficient and add to their medical knowledge by instruction in the newer methods which recent scientific investigation has introduced. Too much emphasis cannot be laid upon this part of the work. It keeps the profession of the state a live, intelligent body of men, interested in the advances in medical knowledge, watchful of the public health of the people, and in close touch with the Medical School.

This association, therefore, strongly commends and endorses the summer postgraduate work to practicing physicians, recently established at the Medical School, and urges upon the members of this association attendance at these excellent courses. In the year 1920-21, 32 and in the year 1921-22, 34 doctors matriculated for these courses. This attendance does not indicate a proper interest upon the part of the profession in the excellent work offered.

GREATER HOSPITAL FACILITIES UPON THE CAMPUS

6. No school of medicine can fulfill the requirements of a teaching institution without adequate hospital facilities. This the University of Minnesota does not now possess and its instruction is much handicapped thereby. This association, therefore, urges that steps be taken by the State to enlarge the hospital upon the campus to a capacity of 600 free beds in order to meet the growing clinical needs of the institution.

NEW DEPARTMENT OF PREVENTIVE MEDICINE AND PUBLIC HEALTH

7. For ten years or more the importance of Public Health education has been apparent and has often been discussed at the University. Various obstacles stood in the way of a proper allocation of and co-operation within this important field. More recently the matter was reopened under better conditions; and, as a result of a conference representing all interests, a new department was authorized in the Medical School to be known as the Department of Preventive Medicine and Public Health. An initial budget of \$15,000 was provided. Dr. Harold Diehl, director of the University Health Service, was made head of the new department, in order that the health work among students and the educational and research functions of the department might be co-ordinated. Dr. L. D. Bristol, a trained sanitarian, has been brought to the University as Professor of Public Health on a full time basis. Dr. Chesley and others of the State Board of Health will be connected with the department as part time teachers.

The new department will conduct courses of instruction in health subjects adapted to the needs of various colleges and student groups. Under the direction of the department also will be organized comprehensive curricula embracing all the subjects—medical, engineering, economic, social and educational—needed in the training of health officers, sanitarians and public health nurses.

This association congratulates the University on this important step and especially notes with satisfaction the location of this new department in the Medical School. The progress of Public Health must in the final analysis depend upon the growth of the medical sciences, and Public Health education should reflect the best medical opinions and ideals.

THE SCHOOL OF NURSING

8. The School of Nursing was the first of its kind to be placed on a University basis. A year ago the school was enlarged to include the Minneapolis General Hospital, the Northern Pacific Hospital, St. Paul, and the Charles T. Miller Memorial Hospital, St. Paul. Students rotated through these institutions will be trained in all phases of nursing. The school has always had an excellent reputation and should do even better on account of the merger just mentioned. The attendance is increasing, there being 87 freshmen enrolled this fall.

This school sends out highly educated and well trained nurses. There is need for such nurses. But it does not seem possible that all sick-room assistants can have either the preliminary education or the long professional training demanded by the University School. This association believes that the University would do a large service to the state if it could standardize the education for a second class of nurses or nursing attendants, whose services would be available to people of moderate means. Even if the University could not educate such nurses, its authority as a standardizing agency should be sought on this problem.

The University has never had adequate housing for its nurses. With the large influx of students to the enlarged school the situation became worse. It was necessary to have housing off the campus. The old houses in the medical quadrangle, used so long as nurses' homes, should, in the interest of sanitation and the development of a beautiful campus, be cleared away. When the hospital is enlarged, additional housing facilities for nursing students will be necessary. The committee believes the attention of the Board of Regents should be called to these facts.

TODD MEMORIAL HOSPITAL

9. It is gratifying to know that the memory of one of our colleagues, the late Col. Frank C. Todd, is to be perpetuated by a pavilion in the University Hospital group. We learn that, including the gifts of Mrs. Todd and Mrs. Gale, \$155,000 is now available. This is not sufficient to carry out the objects set forth in Dr. Todd's memoranda in their entirety. This association commends the effort to raise additional funds by private subscription. The Medical

School has never received gifts or bequests from wealthy private citizens such as it deserves or such as other institutions have received. The State Hospital and the Medical School do a great work for the poor people of the state. Members of this association are sometimes consulted by their patients as to the disposal of their estates. It behooves us in such circumstances to call their attention to the perpetuity of the University and the needs of the Medical School.

GENERAL HOSPITALS OF MINNEAPOLIS AND ST. PAUL

10. Under the present plan of medical instruction the University does not utilize to the fullest degree the splendid hospital facilities furnished by the General Hospitals of Minneapolis and St. Paul, both for undergraduate and post-graduate instruction. That these institutions may supplement the work of the University Hospital this association emphasizes a closer correlation of work of these hospitals with the clinical instruction in the medical school, and in order to bring this about, would recommend that all members of the clinical staff of the General Hospitals of Minneapolis and St. Paul be given teaching positions upon the University faculty.

STATE PSYCHOPATHIC HOSPITAL

11. This association endorses and recommends the establishment by the State of a Psychopathic Hospital upon the campus, under the control of the Board of Regents and the faculty of the Medical School. This institution would act in close co-operation with the State Board of Control and would serve alike the courts, the departments of Psychology and Education at the University and the Social Service forces of the State as well as medical and nursing education. Several states have such hospitals, one of the latest being Colorado, which appropriated \$350,000 for this purpose by direct referendum.

A TUBERCULOSIS PAVILION

12. The State of Minnesota needs an institution where persons suspected of tuberculosis in its early stages might be placed to observe and study without exposure to middle and advanced stage cases. Such an institution, included on the campus as a part of the University Hospital, could fill a three-fold purpose: First, serve as a clearing house for persons showing symptoms of early tuberculosis; second, provide an institution in which medical students and general practitioners could be taught the early diagnosis of the disease; third, offer a fruitful field in which research study in tuberculosis could be carried on.

This association endorses and recommends the establishment of a Tuberculosis Pavilion as a part of the University Hospital group, to be built and maintained by the State, as a clearing house in which persons suspected of having early tuberculosis could be observed and studied, to be under the control of the Board of Regents and the faculty of the Medical School.

INSTRUCTION IN THE SPECIALTIES

13. The rich financial rewards, the fixed hours of service, and the ease of life arising out of the specialties are attracting the young men of the profession into these fields of medical practice. Modern educators are of the opinion that there is a distinct drift away from general practice into the specialties, among the newer graduates. The committee, in order to secure some intelligent idea about the situation, is indebted to a member of the class of 1919 for a survey of this class relative to the number of its members who were engaged in general practice as compared with those in the specialties, and it may be of interest to know these figures.

General Practice, 34; Specialties, 25; Teaching, 2; Unknown, 2; Missionary, 1. It may also be of interest to know that of this number 22 were practicing in the cities of Minneapolis and St. Paul, 13 went out of the state, 17 engaged in general practice in the state, 5 at Rochester, 5 unknown, 1 teaching in the University of Minnesota, and 1 missionary.

This association, therefore, calls the attention of those in charge of medical education in this state to the impor-

tance of training men for the work of general practitioners and firmly believes that the training of specialists should not be undertaken among recent graduates who have not laid a foundation in the general practice of medicine sufficiently broad to carry a training in the special branches.

J. FRANK CORBETT, M.D. (ex-officio)
GEO. DOUGLAS HEAD, M.D. (Chairman)
JOHN T. ROGERS, M.D.
CHAS. ERDMANN, M.D.

THE PRESIDENT: What do you wish to do with this report?

DR. J. C. LITZENBERG: As a teacher in the University I want to say that this report is so constructive and its intent so helpful that I want to have the honor of moving the adoption of the report and to include in my motion that a copy of the report be sent the Board of Regents and the Dean of the University Medical School.

Seconded and carried.

THE PRESIDENT: This report will be transmitted to the Board of Regents through the usual channels.

DR. J. C. LITZENBERG: At the proper time, if it is not in order now, I would like to move that this Committee on Medical Education be made a standing committee.

THE PRESIDENT: That will come under new business.

DR. ROBERT EMMET FARR, Chairman, presented the report of the Editing and Publishing Committee as follows:

REPORT OF THE EDITING AND PUBLISHING COMMITTEE OF MINNESOTA MEDICINE SUBMITTED TO THE HOUSE OF DELEGATES, THURSDAY, OCTOBER 12, 1922

Mr. President:

Members of the House of Delegates:

I present herewith the Fifth Annual Report of MINNESOTA MEDICINE for the year beginning August 18, 1921, and ending October 5, 1922.

As the date of furnishing this report practically ends the first five years of the publication of MINNESOTA MEDICINE, it would seem apropos to review briefly some points in the history of our Journal so that we may be enabled to take stock concerning its accomplishments, its present status, and its future possibilities.

By the way of refreshing your memories, I may state that in 1917 the House of Delegates decided to publish a Journal of its own. The first Committee consisted of Doctors Wilson, Taylor, Hynes, Buckley and Farr. At the completion of their terms Dr. Buckley was succeeded by Dr. Christianson and Dr. Hynes by Dr. Adair. It has been my pleasure to have had the honor of serving as Chairman of the Committee during this period.

Our first meeting was held on November 19, 1917, and since that time the Committee has met about once a month for the purpose of considering matters of importance in relation to the Journal.

The birth of our Journal occurring as it did during the war period, with its accompanying turmoil and high prices, necessarily presented to your Committee numerous hardships and handicaps. Concomitant with these handicaps the Committee found itself opposed by some members of our Association, who took the attitude that the time for launching a State Journal was not propitious, and by a certain few, who, for selfish reasons, were desirous of preventing the success of the adventure.

Our first year was successful far beyond our expectations, notwithstanding the fact that our organization took place so late in the year that we were unable to obtain a fair volume of advertising for the new publication. At the end of the first year the price of paper stock began to increase and during 1919-20 averaged almost 400% above normal. Notwithstanding the fact that the Journal has been published through the period of high prices unprecedented in the history of American industry, in addition to contending with a printers' strike, which lasted almost a year, the

size of the Journal has been increased from sixty-four pages per issue to ninety-four pages per issue during the past three years. Of the ninety-four pages sixty-three have been reading matter and the balance advertising.

Our Committee wishes to call your attention to the fact that during the Journal's life all objectionable advertising has been refused and that through this item alone a loss of several thousands of dollars has been accepted rather than lower our standards in the slightest degree. Furthermore, we have eliminated from the cover of our Journal all advertising, adopting an attractive cover design, printed on tinted stock. While these changes and restrictions have added materially to the cost of our publication we believe that the additional expense has been justified and that we have today in MINNESOTA MEDICINE one of the best, if not the best, of the State Medical Journals.

It might be well to consider the progress of our State Association during these five years.

Our membership in the year in which MINNESOTA MEDICINE was established was 1,426, while in the year 1922 the membership is 1,815, or a net gain of 389 members. Again, at the time our Journal was established the net assets of the Association were approximately \$6,500.00, while, at present, our net assets are something over \$12,000.00.

While your Committee would hesitate to intimate that the establishment and operation of MINNESOTA MEDICINE was directly associated with this happy condition of the State Association, yet this evolution coincides most accurately with the reports of a score of State Secretaries, who responded to a questionnaire sent out by Dr. Buckley in 1917, in which they agreed that their State Journal had been one of the most potent factors in developing the State Association.

For the year just ending MINNESOTA MEDICINE shows a surplus of \$966.78, for the period elapsing since the Duluth convention of 1921. The Committee has every confidence that the report for next year will show a much larger surplus than this, as the cost of production will be materially less.

During this five-year period your Committee has been most ably represented by Dr. E. T. F. Richards, our former Editor, and Dr. Carl B. Drake, our present Editor. These men have given unsparingly of their talents and the scientific success of the Journal is in a large measure due to their efforts.

To Mr. J. R. Bruce, our efficient manager, whose only increase in remuneration has been from the larger volume of advertising obtained for the Journal through his office, the Committee expresses its most hearty appreciation. The financial success of the Journal has been due largely to his enterprising and energetic efforts.

At this, the completion of my term as a member of the Editing and Publishing Committee, I wish to express my sincere thanks not only to the editors and business manager of the Journal, but to those who have served so faithfully as members of the Editing and Publishing Committee, who have without hope of remuneration of any kind sacrificed much in order to be present at our meetings.

For myself I wish to state that notwithstanding the many barriers which have presented, the continued growth and success of MINNESOTA MEDICINE has more than repaid me for any personal outlay I may have made.

On behalf of the Committee I wish to thank the members of the Council, the House of Delegates and the individual members of the State Medical Association for their kindness and co-operation.

With my best wishes for a still more successful career for MINNESOTA MEDICINE in the future this report is respectfully submitted.

ROBERT EMMET FARR, M.D.

THE PRESIDENT: You have heard this splendid report. What will you do with it?

It was moved that the report be adopted.

Seconded and carried.

THE PRESIDENT: The next will be the report of the Committee on Cancer.

DR. VERNE C. HUNT, Chairman, reported the following:

CANCER COMMITTEE

To the President and House of Delegates of the Minnesota State Medical Society:

Your Cancer Committee begs to submit the report of its activities during the past year.

You are all familiar with the organization of the American Society for the Control of Cancer. This Society had its inception in May, 1913, for the purpose of disseminating knowledge concerning the symptoms, diagnosis, treatment, and prevention of cancer, to investigate the conditions under which cancer is found, and to compile statistics in regard thereto. The need for such a society is apparent in the realization of the fact that in the United States the deaths from cancer have increased from 63 per 100,000 population in 1900 to 83.3 per 100,000 in 1921, and in the state of Minnesota from 66.8 per 100,000 in 1910 to 90.7 per 100,000 in 1921.

In 1921 the American Society conducted its first national educational cancer campaign during the first week in November. Some time previously the chairman of your Committee was appointed Regional Director for the American Society for the Control of Cancer in Iowa, Minnesota, North and South Dakota and Montana, and it seemed proper that your committee take over the conduct of the campaign in behalf of this Society in the state of Minnesota.

The Committee endeavored to carry out the plans adopted by the National Society, which consist of presenting the known facts about cancer to the people through widely advertised lectures at public meetings, short talks before the various clubs, lodges and religious organizations. This was accomplished in many places throughout the state through the organized efforts of the members of the profession of the various cities who volunteered their time and services. During Cancer Week last November, 123 popular lectures were given throughout the state and a large amount of literature prepared for the National Society was distributed at these public meetings; 103 different news articles and editorials were printed in papers throughout the state, in addition to the wide circulation of the Associated Press cancer news articles; lantern slides were shown in many moving picture theatres; and it is estimated that 300,000 people saw the 2-reel film "The Reward of Courage," which was supplied by the National Society. One thousand copies of Doctor Keen's article, "A Message of Hope," were sent to the ministers of the Protestant churches with the request that they be read on Sunday, the opening day of the Campaign.

The Minnesota State Board of Health and Minnesota State Public Health Association have been of great assistance not only during Campaign Week but throughout the year. Early in this year the 2-reel film "The Reward of Courage" was turned over to the State Public Health Association, and during the past eight months has been in constant use through their organization.

It is the opinion of the members of your Committee that it can best serve the interests of the Minnesota State Medical Society by co-operating with the American Society for the Control of Cancer in their educational campaign. Furthermore, it is the request of your Committee that the House of Delegates adopt a resolution indorsing the activities of the American Society for the Control of Cancer.

Respectfully submitted,

VERNE C. HUNT (Chairman)
AARON F. SCHMITT
THEODORE L. CHAPMAN
WILLIAM F. WILD
HENRY WIREMAN COOK
HARRY P. RITCHIE
A. C. STRACHAUER
A. J. CHESLEY.

It was moved that the report be received and the recommendations be adopted.

Seconded and carried.

DR. THOMAS McDAVITT, St. Paul, Chairman, presented

the report of the Committee to Report on a Common Examining Board, and in connection therewith, submitted a bill to be introduced in the Legislature. He stated, in the first place, that in order to function properly this bill must have the support of the medical profession. It also must have the support of the legislators and the only way this could be brought about is by complete co-operation of the medical profession, bringing all their endeavors to bear upon the legislators.

The Committee consisted of Drs. William J. Mayo, J. W. Bell, E. W. Buckley, R. O. Beard and Thomas McDavitt.

He said the Committee had held several meetings and desired to present this bill to the Legislature after it has received the sanction of the House of Delegates. Dr. McDavitt then read the following bill:

REPORT OF COMMITTEE ON COMMON EXAMINING BOARD

"Bill for an act defining the practice of healing, creating a board of examiners in the basic sciences and establishing its powers and authority."

Be it enacted by the Legislature of the State of Minnesota:

Sec. 1. Definitions. For the purposes of this act the practice of healing is defined as follows:

A person practices healing who shall offer or undertake by any means, other than mental or spiritual, to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical condition. The practice of healing includes the practice of medicine and surgery, osteopathy, chiropractic and any other cult, system, or type of healing other than mental or spiritual, that now is recognized or hereafter may be recognized in this state. The sciences essential to the practice of healing are defined as Anatomy, Chemistry, Pathology and Physiology, hereinafter called the basic sciences.

Sec. 2. Board of Examiners in the Basic Sciences.

There is hereby created and established a board to be known as the State Board of Examiners in the Basic Sciences, hereinafter called the board.

Sec. 3. Appointment of Board by Governor and Qualifications of Members.

Within thirty days after the passage of this act, the Governor shall appoint the state board of examiners in the basic sciences, consisting of four residents of Minnesota who shall be appointed for a term of four years or until their successors are appointed, except that, of the first members, one shall be appointed for one year, one for two years, one for three years and one for four years. One member of said board shall be a competent anatomist; one shall be a competent chemist; one shall be a competent pathologist; one shall be a competent physiologist. No member of said board shall be engaged in the practice of healing. The President of the University of Minnesota, the Dean of the Department of Agriculture and the State Superintendent of Schools shall, upon request of the Governor, advise him in regard to the scientific standing and competency of any anatomist, chemist, pathologist, physiologist.

Sec. 4. Organization and Procedure.

Within thirty days after being so appointed, said board shall assemble and organize by electing a president, vice-president and secretary-treasurer. Said board shall have a common seal. They shall adopt minimum standards of preliminary education.

No rule of said board shall discriminate against any school or system of healing. Three members of said board shall constitute a quorum. Said board shall meet on the third Tuesday of February, March, June, August, September and December in each year and at such other times as a majority of the board may deem necessary. The secretary shall keep a record of all of its proceedings, including a register of all applicants for examination, giving their ages, educational qualifications and the results of their

examinations. Said books and records shall be prima facie evidence of all matters therein recorded.

Sec. 5. Fee Examination, Certificate.

Any person desiring to practice healing in this state shall apply to the secretary of said board and pay a fee of ten dollars. The examinations conducted by the board shall be both practical and written and shall be held in the laboratories of the College of Science, Literature and the Arts of the University of Minnesota. If a candidate shall attain a grade of 75% or more on all four subjects he shall receive a certificate signed by the president and secretary and bearing the seal of board. If he fails in one subject he may be re-examined in that subject within one year without further fee. If he fails in two or more subjects he shall not be examined until after the lapse of one year and then only upon reapplication and the payment of a further fee of \$10.00.

Said board may issue a certificate to any applicant who presents acceptable evidence of having passed examinations in the basic sciences aforesaid before a legal examining board of another state, or a foreign country, provided the board of examiners in basic sciences is convinced that the educational and examination standards were as high as those set forth in the rules of said board. Applicants for such acceptance of previous examinations shall pay a fee of five dollars.

Sec. 6. All fees received by said board shall be paid to the secretary-treasurer, who shall forthwith deposit the same with the state treasurer, to be kept in a separate fund for the use of said board; which fund shall be paid out only on written orders signed by the secretary-treasurer of said board. No expense shall be incurred by said board other than that which may be covered by such fees. The secretary-treasurer shall give a bond in such sum as the board may deem necessary. He shall on or before August first of each year file with the Governor a report of all the receipts, disbursements and transactions of said board for the preceding fiscal year. The members of the board shall be entitled to ten dollars per day and necessary expenses while attending meetings and conducting examinations of the board.

Sec. 7. Certificate Required Before Examination for Practice of Healing.

No board at present existing or which may hereafter be established for the examination and licensing of practitioners of healing shall admit any candidate to take its examination nor license any candidate by reciprocity nor in any other way until said candidate presents an official certificate of having successfully passed the examinations conducted by the board of examiners in the basic sciences or an official certificate of said board of examiners in the basic sciences accepting the results of a previous examination, as provided in Sec. 5 of this act. Any licensing board may accept the certificate of the examiners in basic sciences in lieu of the examinations in said basic sciences required by law to be conducted by such licensing board.

Sec. 8. Nothing in this act shall apply in any way to any person licensed to practice any system of healing in this state prior to the passage of this act.

Sec. 9. This act is supplementary to existing laws and not a repeal thereof except insofar as this act may be inconsistent with any provision of existing laws.

Sec. 10. Said board of examiners may revoke any certificate for sufficient cause, but before this is done the holder of said certificate shall have thirty days' notice, and after a full and fair hearing of the charges made, by a majority vote of the whole board, the certificate may be revoked.

Sec. 11. Any person violating any of the provisions of this act, or who shall wilfully make any false representation to the board of examiners in applying for a certificate, shall be guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than one hundred dollars and not less than ten dollars.

THOS. McDAVITT, M.D.,
Chairman for the Committee.

After Dr. McDavitt had answered several questions re-

garding the bill, Dr. J. C. Litzenberg moved the adoption of the report.

Seconded and carried.

Dr. E. W. BUCKLEY moved that the Legislative Committee through the Council be furnished with an amount of money that the Council deems necessary, to carry out this program before and during the session of the Legislature.

Seconded and carried.

Dr. H. M. WORKMAN reported for the Publicity Committee, stating that this committee had been succeeded in its duties by the Committee of Fifty. Since this committee was appointed the different county societies were written to appoint their committees and to report to Dr. Savage a statement of what they had done. This, he said, was as far as the Publicity Committee really went. The Publicity Committee was ready to render all the assistance it could to the Committee of Fifty.

THE PRESIDENT stated it was not the intention of the Committee of Fifty to supplant the original Publicity Committee. The function of the Publicity Committee was to help with the other committee in organizing these societies, which they had done, and he believed that should still continue to be their function.

It was moved that the report be adopted.

Seconded and carried.

The report of the Hospital Committee was called for.

The Secretary reported for Dr. Wallace H. Cole, Chairman of this Committee, that a meeting of this committee had not been called because no work or business had been referred to it. The Secretary stated that he had received a communication from the Secretary of the American Medical Association recommending that the Hospital Committee and the Committee on Medical Education be combined, inasmuch as the Hospital Committees throughout the different states had finished the business for which they were organized. He thought this matter of combining the two committees should come up under New Business.

The Committee on Miscellaneous Business was asked for their report.

The Secretary stated that Dr. B. S. Adams, Chairman of this Committee, reported that a meeting had not been held as no work or business had been referred to the Committee.

Dr. D. O. THOMAS, Minneapolis, presented the report of the Committee on Necrology.

The report is as follows:

NECROLOGY

Your committee on necrology in making its report, wish to say that we have been impressed not only by the number but also by the character of those who have gone beyond last year. When we consider the eminence and proficiency of several, and how some of them paid the great sacrifice at their post, here at home, it is very befitting that we pause a moment to recall their virtues and remember how their passing invites us to exalt that which is exemplary and imperishable in our profession.

The world goes on, as a procession, and the great concern of the professional man is that in that procession he is not left behind. The attending of medical meetings, visiting clinics, and reading new books are done largely so as to be counted in with a moving progressive procession. Therefore there is no greater honor that we can confer on those of our company, who last year were called to

"join the choir invisible

Of those immortal dead who live again

In minds made better by their presence";

than to pause to recount with affection their names and character and record with esteem their worthy place as members of the Minnesota State Medical Society.

Without design or effort on their part they won a high place in our affection, by the geniality of their personality and faithfulness to ethical ideals. And the best monument to any man is that which is built up day by day patiently in the estimation of others, so that in after life his memory has reproduced in others the qualities which they loved in him. Artists carry in their minds ideals much cherished which pass only imperfectly to the canvas, so let us carry in memory the tranquil recollection of what our departed brethren were, and try to perpetuate in ourselves the elevated tone and manly qualities which made them worthy of esteem and confidence.

There is an inherent ambition in every man that his name shall not be forgotten.

When on vacation or at a country picnic the professional man as well as the schoolboy seeks to immortalize himself by carving his name on some bridge or barn-door. We all write our names and dates and something that will not rub out every day, and can profit by the exemplary conduct of our departed comrades, who eschewed the vanity of the false ambitions and petty rivalries of earth, and with conscientious motives and unblemished characters, performed their duty with humane fidelity and untiring sacrifice. It is good to have known such men, and unfortunate that the hurry of life and distant locations gave scant and infrequent time for the enjoyment of converse and friendship. But did time permit it would be a pleasure to give individual tributes to the worth and sacrifices of our brethren, and speak of the esteem in which they were held in their respective communities. We may say of them as a group, that they were men of ability, wise in counsel, and untiring in service. They lived not to be ministered unto, but to minister. Their true worth recalls the Master's encomium on Mary, "She hath done what she could." The lustre of their lives suggests Montgomery's fitting verse:

"Thus star by star declines,

Till all are passed away;

As moving high and higher shines

To pure and perfect day;

Nor sink those stars in empty night.

They hide themselves in heaven's own light."

Dr. Christian S. Reimstad, of Brainerd, died Aug. 28, 1921, aged 54. He was born in Norway and graduated from the University of Minnesota, class of 1896. His death was caused by fracture of the skull. He was an able and successful practitioner.

Dr. Charles D. Conkey died Sept. 9, 1921, aged 65. He was a graduate of Rush Medical College, class of 1882. In 1889 he studied at the New York Post-Graduate Medical School, and practiced many years at Duluth and Superior. He was the first physician in the Northwest to confine his practice to Ophthalmology and Oto-Laryngology. He stood high in his profession, and excelled as diagnostician. To every patient rich and poor alike he endeavored to be of the utmost use.

Dr. George F. Merritt, of St. Peter, died Oct. 26, 1921, aged 75. He graduated from Rush, class of 1872. He began to practice at St. Peter in 1883 and continued there until the time of his death. He served as city public health officer for many years, and at one time was coroner of Nicollet County. He was a former Treasurer of Minnesota Valley Medical Association, and was a very excellent and popular man, and had many friends among his fellow-members in the County and State Societies and the A. M. A.

Dr. Christopher A. Anderson, of Rush City, was killed on Christmas day in an accident, as a train struck his automobile. He was a graduate of the University of Minnesota, class of 1892. He practiced at Rush City for over 20 years, and was 54 years old. He was a brother-in-law of Dr. G. C. Eitel, and was a highly respected practitioner.

Dr. Albert Jasper Murdock, of Minneapolis, died Jan. 4, 1922, aged 75. He was a graduate of the College of Physicians and Surgeons, of New York, class of 1870. He belonged to the County and State Medical Societies and

A. M. A. He came to Minneapolis in 1883, and was widely known and esteemed. He was a practitioner of excellent judgment, loyal to his patients, and true to his friends.

Dr. James N. Metcalf, of Monticello, died Feb. 12, 1922, aged 42. He was killed by a train which struck his sleigh. He was a graduate of the University of Minnesota, class of 1904. He was a busy and successful physician.

Dr. J. J. Donovan, of Litchfield, died March 18, 1922, aged 44. He graduated from the University of Minnesota, class of 1901. He served two years in the war, and his health was seriously impaired by being gassed. He was a Fellow of the American College of Surgeons, and was recognized as a surgeon of excellent experience.

Dr. Earl E. Cannady, of Prior Lake, died March, 1922, aged 37. He graduated from Northwestern Medical School, class of 1909, and went to Prior Lake soon after graduation. He died of acute miliary tuberculosis.

Dr. H. E. Conley, of Cannon Falls, died May 27, 1922, aged 67. He graduated from Iowa Medical College, in 1884. He practiced at Cannon Falls 37 years. He was prominent in the political and educational activities of the town. He had acted as mayor, councilman, and at the time of his death was president of the Board of Education. He was a man of great activity and bore an excellent reputation.

Dr. Joseph A. Gates, of Kenyon, Minn., was killed June 15, 1922, aged 52. He graduated from the University of Minnesota, class of 1895. He served in the Medical Service of the U. S. Army during the World War, with the rank of Captain. He took interest in civic matters and was a man of fine executive ability. He was mayor of Kenyon in 1905, 1907 and 1909, and at the time of his death was a member of the Legislature.

Dr. H. N. McDonald, of Minneapolis, died July 15, 1922, aged 59. He was born at Glengarry, Ontario, 1863. He graduated from McGill University in 1889 and came to Minneapolis the same year. He was a member of the Faculty of the College of Physicians and Surgeons, of Minneapolis, and was an excellent diagnostician and teacher. He stood high in the Masonic Orders, and was highly esteemed as a practitioner.

Dr. John J. Eklund, of Duluth, was shot and instantly killed in his office Aug. 19, 1922, aged 61. His demented assassin immediately committed suicide. Dr. Eklund was a distinguished graduate of Gustavus Adolphus College, and in Medicine graduated from the Minnesota Hospital College, class of 1885. At one time he was coroner of St. Louis County. During the war he was Chairman of the Fourth District Exemption Board, in connection with the duties of which he made the great sacrifice here at home. He was a Fellow of the American College of Surgeons, and had been a president of the St. Louis County Medical Society. He was a surgeon of ability, and was at the time of his death the chief of staff of St. Luke's Hospital. He was also prominent in civic and commercial relations, and was the president of the Duluth National Bank, and a director of the Northern National Bank, and was universally esteemed.

Dr. J. D. Anderson, of Minneapolis, died Sept. 30, 1922, aged 67. He was a native of Connington, Ontario. He was a graduate of Toronto University, 1879, and after extended post-graduate work in Edinburgh, Scotland, was graduated with the degrees of the Royal Conjoint Examining Boards. He practiced 40 years in Minneapolis, and was widely known and much esteemed.

DR. D. O. THOMAS, Minneapolis, Chairman.

It was moved that this report be accepted and spread on the minutes.

Seconded and carried.

DR. A. J. CHESLEY, Chairman, presented two reports, one the report of the Committee on Public Health and the other the report of the Committee on Public Health Problems in Education.

These reports are as follows:

COMMITTEE ON PUBLIC HEALTH PROBLEMS IN EDUCATION

Gentlemen: Your Committee has met to consider the work assigned to it. In accordance with the agreement between the National Education Association and the American Medical Association, made at a conference in Boston in June, 1921, the Secretary of the Council on Health and Public Instruction prepared a plan of procedure for the State Committees as Chairman of the Sub-Committee on Health Problems in Education. This plan provides for the consideration of health problems in education by a Joint Committee of the Minnesota Education Association and the Minnesota State Medical Association.

"The fundamental purpose being to bring to the attention of teachers, school superintendents, members of school boards, and through them the community at large, the vital importance of the problem in education along health lines of the coming generation of citizens, and further to secure effective co-operation of the great professions of teachers and physicians in securing better conditions."

Dr. John M. Dodson is Chairman of the Joint Committee of the American Medical Association with the Committee of the National Education Association of which Dr. Thomas D. Wood is Chairman.

The National Committee will gladly render any advice or assistance in its power to the State Joint Committee which is instructed to report progress from time to time to the Secretary of the Council on Health and Public Instruction of the American Medical Association.

Your Committee has conferred with the officers of the Minnesota Education Association who have requested your Committee to assure you that action will be taken in relation to the appointment of a Committee on Health Problems in Education by the Minnesota Education Association at its business meeting October 25, 1922.

Your Committee recommends that the suggestion of the National Joint Committee that a committee of five from the Minnesota Education Association and the same number from the Minnesota State Medical Association be appointed to discuss and decide upon plans for future work relating to health problems in education, be adopted.

Respectfully submitted,

DR. ELIZABETH WOODWORTH

DR. N. O. PEARCE

DR. A. J. CHESLEY, Chairman.

COMMITTEE ON PUBLIC HEALTH

Gentlemen: Your Committee respectfully calls the attention of the Association to a resolution passed at the 1921 meeting relative to the obligation of the profession to accept duty as local health officers for counties, cities, villages and townships. This is of such importance that your Committee feels physicians should disregard personal convenience and seek such office, otherwise improperly prepared individuals who have the same legal eligibility as regular physicians will secure appointments as local health officers. The county health officers' powers and duties are to be increased. He now becomes Chairman of the County Administrative Board for Maternal and Infant Hygiene. He is the only official with county-wide health jurisdiction and the general supervision of sanitary measures for the protection of tourist traffic naturally falls to him. Also he should supplement the local board's work in communicable diseases.

Your Committee considers leadership in public health to be a duty of the medical profession. The maternal and infant hygiene program offers a splendid opportunity to the profession to secure such leadership. The activities of the State Board of Health and of the agencies co-operating with the Division of Child Hygiene will be along educational lines only. Any material aid desired must be initiated and supplied entirely as a local project. The public is vitally interested in the protection of maternity and infancy and under the guidance of the medical profession it should be possible to reduce the unnecessarily high death rate among mothers and infants and secure better and more general medical and nursing service.

The new Department of Preventive Medicine and Public Health of the University Medical School offers another op-

portunity to the medical profession. The close co-operation between this Department and the State Board of Health will be of advantage to physicians desiring special work in public health subjects.

Your Committee suggests that the Division of Child Hygiene of the State Board of Health, in co-operation with the State Board of Medical Examiners and the Medical School of the University, undertake a survey of the practice of midwifery in Minnesota. The Secretary of the State Board of Medical Examiners believes that such a survey would be of assistance in elevating the standards of midwifery and states that until our foreign population becomes more Americanized than at present midwives must be put up with.

Your Committee suggests that the Association indicate its confidence in the integrity and wisdom of the members of the state health agencies, all of whom are well-known, by a general endorsement of the legislative programs of the Live Stock Sanitary Board, State Board of Health and Dairy and Food Commission.

Respectfully submitted,

DR. L. B. WILSON

DR. THOMAS McDAVITT

DR. A. J. CHESLEY, Chairman.

DR. H. M. WORKMAN moved that these reports be adopted.

Seconded and carried.

Under NEW BUSINESS Dr. Charles R. Ball, St. Paul, appeared before the House of Delegates as a representative of the Section Delegates of the House of Delegates of the American Medical Association. Dr. Ball said: Last summer at St. Louis two amendments were made to the constitution and, as you know, these amendments have to lie over for a year before they can be voted on. They will come up at the American Medical Association meeting next year in San Francisco and will then be voted on.

As to the first amendment, at the present time the scientific sections have the privilege of appointing one delegate to the House of Delegates of the American Medical Association; this amendment would do away entirely with the Section delegates, if passed. The argument of those who proposed the amendment was that the House of Delegates is supposed to be a democratic institution and only delegates that are members of the constituent associations, which are the state societies, really have a right to seats in the House of Delegates. This really is not a good argument because the Section delegates do not take anything away from the democratic organization of the House of Delegates, because all of us who go to the meeting of the American Medical Association, also attend the Scientific Sections and in the Scientific Sections anyone who wishes can have an opportunity to vote for Section delegates.

After these amendments were offered, the Sections held meetings and resolutions were passed condemning these amendments. Also it was thought best to bring this matter before each constituent association, and state societies at their regular annual meetings, and, if possible, have them advise their delegates to vote against this amendment and leave the constitution stand as it is at present.

From Dr. Workman I understand the Council this morning took such action in an advisory capacity. If the Section delegates had no representation in the House of Delegates, they would have no contact with the management of their own affairs. The Section delegates want to leave this matter as it is and, if possible, to instruct the state delegates to vote against any change in the constitution concerning this matter.

DR. H. M. WORKMAN moved that the House of Delegates of the Minnesota State Medical Association instruct its delegates to the American Medical Association meeting next year to vote against any change which would eliminate the Section delegates.

Seconded and carried.

The Secretary said that the State of Texas has had for some time a Women's Auxiliary of the Texas State Medical Association and that at the meeting of the American Medical Association at St. Louis, a resolution was passed by the House of Delegates of the American Medical Association favoring the formation of a Women's Auxiliary of the American Medical Association, which Auxiliary had already been formed.

He said he had received communications from the Corresponding Secretary of the National Women's Auxiliary Association requesting that this matter be brought before the House of Delegates of the Minnesota State Medical Association, calling for a meeting of the wives of the members of the state association with a view to forming such a Women's Auxiliary in the Minnesota State Medical Association, contingent upon the approval of the House of Delegates. Such a meeting would be held at 11 o'clock, Friday, October 13th. He said some action should be taken at this meeting.

DR. J. C. LITZENBERG moved that such a Women's Auxiliary be authorized.

Seconded and carried.

DR. H. M. WORKMAN referred to the steady recovery of Dr. R. J. Hill from empyema. He stated that Dr. Hill was chairman of the Council for many years and he moved that the Secretary be instructed to send Dr. Hill a communication expressing the pleasure of the House of Delegates at his recovery.

Seconded and carried.

The Secretary read a communication from the Secretary of the American Medical Association dated September 30, 1922, asking that the House of Delegates of the Minnesota State Medical Association take a similar action to that taken by the House of Delegates of the American Medical Association at the St. Louis meeting in regard to the Volstead Act, and also in regard to the training of veterans in the Schools of Chiropractics.

The Secretary moved that all these matters be referred to the Committee on Resolutions to be reported back to the House of Delegates at its meeting on Saturday morning.

Seconded and carried.

Under NEW BUSINESS Dr. A. E. Hedback moved that the Committee on Medical Education and the Committee on Hospitals be combined and continued.

Seconded and carried.

DR. J. C. LITZENBERG moved that the Committee on Medical Education be made a standing committee.

Seconded and carried.

On motion, which was duly seconded and carried, the House of Delegates adjourned to meet at 10 A. M., Saturday, October 14th.

SATURDAY, OCTOBER 14, 1922—SECOND MEETING OF THE HOUSE OF DELEGATES

The House of Delegates met pursuant to adjournment at 10 A. M., and was called to order by the President.

The Secretary called the roll, and announced 27 delegates and alternates present. Dr. A. S. Hamilton, Hennepin County, and Dr. H. E. Bowers, of Wabasha County, were seated.

The President ruled that alternates would have to present their credentials in order to take the places of delegates.

The next order of business being the election of officers, nominations for President were called for.

Dr. H. M. Workman nominated for President, Dr. E. S. Judd, Rochester.

The nomination was seconded by several, and the Secretary was instructed to cast the ballot of the House of Delegates for Dr. Judd.

The Secretary cast the ballot as directed and Dr. Judd was declared duly elected.

The President appointed a committee consisting of Drs. William F. Braasch and H. Z. Giffin to conduct the President to the platform at the time of the joint meeting, to be held at 2:00 P. M.

The following officers were nominated and declared duly elected:

First Vice-President, Dr. Theodore Bratrud, Warren.
 Second Vice-President, Dr. Harry P. Ritchie, St. Paul.
 Third Vice-President, Dr. G. H. Mesker, Olivia.
 Secretary, Dr. Carl B. Drake, St. Paul (re-elected).
 Treasurer, Dr. F. L. Beckley, St. Paul (re-elected).
 Councilor for the Second District (term of three years), Dr. J. G. Millsbaugh, Little Falls.

Councilor for the Third District, Dr. Warren A. Dennis, St. Paul (re-elected).

Councilor for the Fifth District, Dr. H. M. Workman, Tracy (re-elected).

Delegate to the American Medical Association, Dr. J. L. Rothrock, St. Paul.

Alternate Delegate to the American Medical Association, Dr. J. Frank Corbett, Minneapolis.

In connection with the election of delegate and alternate to the American Medical Association, Dr. W. A. Jones said: The question might come up relative to the status of the state delegate in the House of Delegates of the American Medical Association. They ought to be permitted to have the floor even if they are not voters or members of the House of Delegates. There are many things they can explain that they are more or less familiar with, and they are not given the opportunity. I do not know whether that requires a change in the By-Laws or not, but that would be a courtesy that I think the delegate would very much appreciate and it would be beneficial to us.

THE PRESIDENT: I think possibly that is a matter of courtesy they could extend, it is a privilege, and if it is the sense of this meeting the chair will entertain a motion that we make this request.

It was moved and seconded that such a request be made. Carried.

THE PRESIDENT: We have the report of the Committee on Resolutions which was appointed day before yesterday. On that committee are Drs. Giffin, Dennis and Buckley. I will ask Dr. Giffin to present the report.

DR. GIFFIN: I have the report of the Secretary of the American Medical Association in connection with other

resolutions concerning a supply of bonded whiskey to physicians. The essentials of this resolution are as follows: In view of the present method of control and limitation in the quantity and frequency of administration of a licensed supply of a satisfactory product, it constitutes a serious interference with the practice of medicine by those physicians who are convinced of the value of alcohol in medical practice; therefore, be it

RESOLVED, That the House of Delegates of the American Medical Association recommend that we be relieved from the present unsatisfactory conditions, and recommend that provision be made for supplying bonded whiskey for medicinal use only at a fixed retail price to be established by the Government. The Resolutions Committee was not able to recommend this resolution to the House of Delegates and therefore took no action one way or another with respect to it.

A resolution is proposed concerning the enrollment of ex-service men in chiropractic and other institutions.

WHEREAS, it appears that a large number of ex-service men from all parts of the country are enrolled in chiropractic schools with the sanction, approval and support of the United States Government, be it

RESOLVED, that the House of Delegates of the Minnesota State Medical Association in its annual meeting, October 14, 1922, approves of the resolution passed by the House of Delegates of the American Medical Association at its meeting of May 23, 1922, and hereby directs that the Federal Government be petitioned to take such action in the welfare of all of the people as will permit ex-soldiers seeking vocational training for the care of the sick and injured to have instruction which will fit them for intelligent service and the recognition, control and prevention of disease, including such adequate training as is given in medical schools recognized by the American Medical Association; that if this cannot be attained they at least have training in anatomy, physiology, pathology and chemistry, which would fit them to pass the examination in these subjects set by the various regular state boards of medical examiners; that the sentiment of this petition applies not only to chiropractic, but to any cult which attempts to train individuals in the art of healing without a sufficient study of the fundamental sciences above mentioned, a knowledge of which is absolutely essential; also that copies of this resolution be respectfully submitted to the Director of the Veterans' Bureau and to the assistant directors in charge of the Medical Division, and the Rehabilitation Division, and to every Minnesota Senator and Member of the House of Representatives.

THE PRESIDENT: You have heard this resolution. What will you do with it?

DR. W. A. JONES: I move that the resolution be adopted as read.

Seconded and carried.

DR. GIFFIN: The Resolutions Committee also proposes a resolution for your consideration and discussion, if not for passage. We understand that there will be an effort made to rescind the action of the last House of Delegates of the American Medical Association condemning this bill, and therefore this resolution is offered for your consideration:

RESOLVED, That the House of Delegates of the Minnesota State Medical Association at its annual meeting October 14, 1922, does hereby endorse the action of the House of Delegates of the American Medical Association at its meeting of May 23, 1922, condemning the Sheppard-Towner Bill. The objection is not to the purpose of the bill, but to the origin of this type of legislation from the Federal Government. This legislation is of the "pork barrel" variety and as such is to be condemned.

THE PRESIDENT: What is your wish?

It was moved and seconded that the resolution be laid on the table. On being put to a vote, the motion was declared lost.

THE PRESIDENT: The chair will now entertain any further motion in regard to this matter.

It was moved and seconded that the report and resolution be accepted.

THE PRESIDENT: We are now ready for discussion, and I will ask Dr. Giffin if he will open the discussion by telling us what this means.

DR. GIFFIN: I would like to refer that to Dr. Dennis.

DR. DENNIS: Mr. Chairman, as I understand, the Sheppard-Towner Bill is a bill which has been passed by the Congress of the United States appropriating a certain sum of money for the purpose of promoting maternity welfare throughout the country. That this sum of money is apportioned among the different states, I believe according to population, and which becomes available to the states provided each state raises an amount of money equal to that which has been apportioned to it by the provisions of the bill. Now, of course, there isn't any objection to the purpose, but the objection to my mind is that this sort of legislation should not originate in the Congress of the United States. It is like the Rivers and Harbors Bill and all other bills in which it is possible for a certain section to acquire money out of the public funds for their own private use, their own private advantage. Except in the case of the Rivers and Harbors Bill it is impossible to see how that work can be done under any other provision, yet it always leads as stated in the resolution, to the "pork-barrel" method of doing things. Certain sections combine and get money for their section on the principle that they will help others in getting money for them. The result is that public funds are wasted in that way. And therefore it seems to your committee that that is bad legislation. It is a sort of thing which should originate in the community which is going to do the work. If that work is to be done it ought to originate in Minnesota where the needs are seen and where the funds will be properly taken care of, and where it will not look as though we were getting something for nothing, which as a fact we never do under these circumstances.

DR. LITZENBERG: Mr. President, there is certainly a misconception about this Sheppard-Towner Bill. This resolution by the American Medical Association took up this "pork-barrel" cry as a smoke screen to hide their underlying opposition to this bill. As it stood they were facing defeat, the Sheppard-Towner Bill was bound to go through, and then they brought forth this smoke screen of "pork-barrel" legislation. That is the silliest argument in the world, because we must then adopt a resolution that we shall not

accept any aid for our roads in Minnesota. We all voted for that, and we are all enthusiastic about Minnesota roads. I think it is persiflage to talk about "pork-barrel" stuff.

Now that bill is not what it was when that resolution was adopted. The Minnesota State Medical Association is flying in the face of one of the best committees that has ever been appointed in this state, with the president of the University as chairman. Minnesota has the honor to be the first state to accept,—one of the first states to accept,—the provisions of the revised Sheppard-Towner Bill. Now the revised Sheppard-Towner Bill puts this maternal and child welfare matter under entirely different auspices than it was originally. Now all of us obstetricians and pediatricists were opposed to that bill as originally drawn because it was going to create a bureau which would be run by a woman not a physician or even a nurse, but that has been changed so that the surgeon-general of the public health department, the public health bureau,—well it is a department the same as the Army and Navy, and the surgeon-general of that has a voice in this, and the control is under the best kind of auspices.

Now you will have to argue against good roads, you will have to argue against all Federal aid of any kind to substantiate your argument. Now Minnesota has a very strong committee, including Dr. Chesley, Dr. Adair, and President Coffman, and other prominent citizens of the state. I have mentioned these names because they are familiar to you, and they are now administering the Sheppard-Towner Bill in Minnesota. It is an honor to this state to be one of the first states to have accepted the revised bill. Now to come and argue against this bill, is only a smoke screen, because then we will have to pass a resolution that we don't want any Federal aid for our roads. Now on the subject of Federal aid, there is nothing new about Federal aid to the state. The provision in this state is that if the state will make a like appropriation, or a sufficient appropriation, they get \$10,000.00, the first part of the appropriation, and further appropriations are apportioned according to the population of the state. I think this thing should be given a thorough trial. We have objected to it, and I was one of the objectors. I took the position that the thing was objectionable because it was not going to be administered by the proper people. I went to our Congressman, and I saw the handwriting on the wall, as far as defeat was concerned; I saw that this thing was going to go through. Our Congressman, who happens to be an old boyhood friend of mine, said, "It is bound to pass, because the idea of it is all right." And he said, "Now what do you want in the way of changes in the administration? We can do that for you, but we can't stop its passage. If you will suggest to us how it can be properly administered so that it will be done in a satisfactory manner, why that can be done." So after that I used what little influence I had with him, in that direction, and evidently there were other Congressmen who were of the same mind with him. For the principles of the bill were good, though proper administration of it was necessary. And the bill was amended so it was properly administered. They didn't listen to the smoke screen of Federal aid for a minute. That is not the real opposition to it. The real opposition to it was the opposition of the medical profession because they are opposed to the idea of the bill itself

and their reasons were a mere smoke screen. And that falls to the ground at once because then you have got to condemn all kinds of Federal aid, including our road law. If there ever was a "pork-barrel," there is your "pork-barrel," but a "pork-barrel" honestly administered for the real benefit of the people is all right. These "pork-barrels," like the Rivers and Harbors Bill, which benefit but a few people, degenerate into the real "pork-barrel" where it is just graft. Do you hear anything against Federal aid to roads where it is properly administered by a commissioner like we have in this state? It is one of the greatest benefits that this state has ever had. It is worth millions of dollars to this state to have this Federal aid on our roads. And I submit that it is worth more to save the mothers and babies than it is to have good roads in Minnesota.

PRESIDENT CORBETT: Is there any further discussion?

DR. DENNIS: Mr. President, I am one of those foolish people who are willing to stick for the truth even though they see inevitable defeat. I think that Dr. Litzenberg probably put the thing exactly right. The bill was bound to go through whether it had defects or not. Now I would be one of those foolish people who would say that it is a matter of bad public policy for the Federal Government to aid in building state roads. I don't think that it is any function of the Federal Government at all. We are perfectly able to build what roads we need and so is every other state. As far as that argument goes it hasn't any weight with me. I maintain what I said before, the purposes are absolutely correct; I don't think that there is any objection to it, and certainly if those objections are ascribed to me they are wrong. But I am also extremely glad that the committee so appointed was exactly the committee that it was, because it is a committee we would all get behind and support if that committee represented the state of Minnesota, and not the Federal Government. But for the Federal Government to engage in this sort of business, I think is absolutely wrong. It is unsound public policy just as it is in the matter of roads, and just as it is in the matter of Rivers and Harbors. When you say that if Federal aid can be honestly administered, I submit that begs the whole question. It can't be done, it never has been done, and never will be done. Therefore I am just as much opposed to it as I was before.

DR. LITZENBERG: Mr. President, I ask the indulgence of the Chair, I suppose it is rather out of order to speak a second time. Now I would like to speak as a citizen and not as a doctor. What is the idea of Federal aid? What is the underlying idea of Federal aid? Dr. Dennis' principle may be all right, but what is the idea of Federal aid? What do they give it for? What is the idea behind it? This is the idea behind Federal aid, the state won't do it. The states won't do it. Now we happen to live in a very progressive community up here. We have taken advantage of the Federal aid to roads, but there are many states that have not even started to build roads. The idea of the Federal Government and Federal aid, is to start the principle of good roads, and of maternal welfare and influence the states to undertake this and to give it a trial and to try it out and to then have it supported by the state. It is to put across the idea, that is what it is. It is to stimulate good roads, that is what it is. Now that is the underlying principle. The states will not do it. How about Min-

nesota, what chance would you have for getting a bill like that through the legislature of the state of Minnesota? But with Federal aid they will put it over. Now, if that is properly administered, and none of us have any doubt but what it will be with the character of this committee in this state, it will be the administration of child and maternal welfare under the auspices of the state, and can be carried out. Now, it isn't done by the Government. The central committee, controlling it through the United States, through the Government, has to O. K. the program of each state. That is the idea of the thing, so as to get the states working along proper lines. Now, I opposed this bill very strenuously until it was properly amended, but I think that the way it is administered now it is a good thing for this Government. If we are going to have Federal aid, let us take advantage of it. The principle of the thing is correct. The Government must stimulate the states to do certain things. If it is left to forty-eight different states, when are they going to do it? Never. You say the principle of this thing is right; the principle of the bill is right.

PRESIDENT CORBETT: Is there any further discussion?

DR. DRAKE: The fact ought to be called to the attention of the House of Delegates that in the administration of the bill the president has named a doctor in each county to act on this county board that is going to supervise the spending of the funds in that county. The way that it is administered in this state therefore puts it very much under the control of this state association. I think it ought to be added, too, that the purposes of this bill are entirely educational. Now, there is a feeling among the laity that enough is not being done for maternal and infant welfare in this country, as statistics show, in comparison with other countries, for instance, Germany and England, we are way down on the list. We all admit that the purposes of this bill are good. Now, if we go on record as opposed to this bill, nobody is going to read the second sentence that the objection is not to the purposes of the bill, but to the origin of this type of legislation, but they are going to say, "Well, the medical profession is on record against saving the mothers and babies." That is going to be the impression; it would look as though we were afraid our business was going to be interfered with. I don't think they will read that second line.

A MEMBER: I would like to ask Dr. Drake if the representative in each county will be a medical man, a nurse, or whether they will be politicians?

DR. LITZENBERG: They will be the health officer, and in one or two instances they will be a chiropractic. There must be two doctors in each county on their board, a health officer and one other physician.

DR. DRAKE: One is appointed by our president.

A MEMBER: The second physician is elected by the county society. In Olmsted county before we came up we elected one to take a place on the committee, if the state society voted to put him there.

THE PRESIDENT: These appointments are made on the recommendation of the home societies. Your society recommends them, and then after that the whole list is submitted for approval to the president of the society.

A MEMBER: What do you do in counties without health officers?

PRESIDENT CORBETT: Then I have made an arbitrary

appointment. It seemed to be the wish of the committee that I pick out a certain man in each county, together with Dr. Chesley; we tried to get at this in the best way we could, and practically all of those recommendations have been made. I think there are one or two yet that have not been made. (By request the Secretary re-read the resolution.)

DR. W. A. JONES: I move that the word "not" be inserted after "it is hereby,"—does not hereby endorse the action, and that the last paragraph be stricken out of the resolution.

PRESIDENT CORBETT: You have heard the substituted motion. Does the maker accept this amendment?

DR. LITZENBERG: A resolution before the house cannot be amended during the discussion.

A MEMBER: If I withdraw that motion can Dr. Jones' motion go through?

PRESIDENT CORBETT: I think the proper thing to do would be to refer it back to the committee.

DR. GIFFIN: The proper thing to do is to either adopt the resolution or not adopt it.

DR. LITZENBERG: We can adopt, reject or amend, that is according to Robert's rules. You can amend a resolution by motion.

PRESIDENT CORBETT: The Chair is very much in doubt on this point. I will have to be guided by the sense of the meeting.

A MEMBER: The committee made the statement that they submitted it not necessarily for adoption but for discussion. The discussion brought out a great many things here, and I am free to say that while I voted for it at the time, voted to adopt it, since Dr. Drake's explanation I am going to vote for rejection. I think that if we adopt this we are going to get ourselves into trouble. It seems to me the best way is to either adopt it or reject it.

DR. W. A. JONES: Is not my amended resolution all right?

DR. LITZENBERG: There would not be any doubt about a motion to lay on the table. I move that the resolution be laid upon the table.

Seconded and carried.

DR. GIFFIN: Just one more suggestion. The Resolutions Committee did not want to put this in the form of a resolution, but we offer it merely as a suggestion for the consideration of the Council and the House of Delegates, namely, as to whether or not it would be better to have the meeting of the House of Delegates the second day rather than the third day. This is because of the small attendance on the third day which has been the rule, I think, for a good many years.

DR. LITZENBERG: Would that require an amendment to the Constitution?

DR. GIFFIN: I believe so.

DR. LITZENBERG: You would have to give notice now and have it acted on next year?

PRESIDENT CORBETT: Is it the will of this meeting to consider a notice for amendment?

While this matter is pending there is another matter that I personally am very anxious to have settled by resolution and that is the question of a lay journal. I talked with Dr. Bell, who is now sick and unable to be with us, and he

felt that a lay journal should be established by the American Medical Association. He made some effort in the last meeting of the House of Delegates to get this done, but they were put off and put off. I think he wanted definite instructions from the House as to how they should proceed.

DR. LITZENBERG: In discussing the subject of the lay journal the other day I understood that it was soon to appear, the first of January.

PRESIDENT CORBETT: Now, that is not according to what I heard from Dr. Bell and he was at the convention.

A MEMBER: He stated that he had just heard that it was to be done.

PRESIDENT CORBETT: That is a journal that has already been in existence, and the trouble has been with the price. It costs too much to get it out among the laymen. I think they did try to run that in as a substitute, but Dr. Bell wishes a definite real lay journal to get out among the people.

DR. LITZENBERG: The journal that is proposed to be gotten out in this state would be published under the auspices of this committee of fifty. I don't think we ought to embarrass the committee of fifty, if they think a state lay journal or pamphlet should be published. And if the other one appear it might be supervised. I think if we can pass some sort of a motion which would not tie their hands, and leave it to their judgment whether a lay journal, or the American Medical Association Journal might not suffice, would be proper.

DR. W. A. JONES: I think the idea of this committee of fifty is to cover four states and is to publish that at a nominal price, fifty cents a year. Now, I doubt whether the American Medical Association can afford to do that. Their price will probably be more. I have no authority for that statement, but simply from what I know of those things. For instance, Dr. Frederick Green, who was so long connected with the American Medical Association, has joined with other physicians in publishing a journal called "Health," a very admirable journal, but the subscription price given is \$2.00. There are not many lay people who are going to subscribe \$2.00 for the purpose of reading a health journal. Now, the hospital association are turning out a journal, I believe in Chicago, for \$3.00 a year, and they expect to get the lay people to support it. And I think it makes it more improbable that any such general subscription price will go. From my experience in Minnesota I feel that the committee of fifty should not be tied in any way, it should be permitted to work out their own salvation, and the American Medical Association be permitted to publish any journal they please.

DR. LITZENBERG: Has the committee of fifty any official connection with this association?

DR. W. A. JONES: Yes.

DR. LITZENBERG: Then I would refer the matter to the committee of fifty. I think the committee of fifty should have unhampered hands to go ahead with what they think is proper in considering a campaign of education in this state.

DR. W. A. JONES: I think so. They have the money.

DR. LITZENBERG: I move that this association approve the publication of a health journal, or lay journal, whatever you want to call it, by the committee of fifty, if they deem it wise.

Seconded and carried.

PRESIDENT CORBETT: Are there other matters from the committee?

DR. GIFFIN: I move that the second meeting of the House of Delegates be held on the second day instead of on the third day of the meeting of the Minnesota State Medical Association. This will have to lie on the table for one year.

PRESIDENT CORBETT: Is that a notice of amendment to the Constitution?

DR. GIFFIN: Yes.

PRESIDENT CORBETT: Dr. Giffin has introduced this motion in the form of an amendment to the Constitution.

Under the head of NEW BUSINESS, Dr. W. L. Beebe, St. Cloud, on behalf of the Stearns and Benton County Medical Society, extended an invitation for the Association to hold its next meeting in St. Cloud.

Dr. F. J. Savage extended an invitation for the Association to hold its next meeting in St. Paul.

After considerable discussion regarding hotel accommodations and facilities for holding section meetings at St. Cloud, Dr. Warren A. Dennis moved that the next meeting be held in St. Paul.

Seconded and carried.

It was moved that the incoming President be empowered to appoint the members of various committees except in so far as these committees have been made standing committees.

Seconded and carried.

PRESIDENT CORBETT: There was a motion made at the joint meeting held yesterday that the House of Delegates be asked to have the paper read by Dr. Hamilton reprinted and broadcast among the committee of fifty and be further used in our legislative campaign. This would include a relatively large number of readers, and it would mean sending it out to a large number of doctors and also to the members of the legislature. What is your wish in regard to this matter?

DR. W. A. JONES: I move that the recommendation of the joint committee be adopted.

Seconded and carried.

PRESIDENT CORBETT: I think our appreciation may well be expressed to several individuals here at the university for their courtesy in extending the meeting places. This has saved the Association a considerable item of expense. It has saved the individual members; each one of you, who bought a ticket to the banquet last night, paid for and got the value right there of all you paid. When we have formerly held the meetings at the Radisson, there was more than a dollar on each ticket that went to pay for space. This has been a great financial saving.

I think that our Committee of Arrangements and our Banquet Committee have done very well indeed, and our appreciation should be given to them. I feel that Mrs. Christianson has done a great deal for us. The chair will entertain a motion to cover these points.

DR. MILLSAUGH: I move that a vote of thanks be extended to the University; that a letter be addressed and sent to the Secretary of the University thanking them for extending this privilege of using the university buildings.

Seconded and carried.

PRESIDENT CORBETT: What is your wish in regard to the Committee of Arrangements and the Banquet Committee?

DR. LITZENBERG: I move that the thanks of the Association be extended to the Committee of Arrangements and Banquet Committee for the successful meeting that they arranged.

Seconded and carried.

PRESIDENT CORBETT: Should we express our appreciation of the services of Mrs. Christianson?

It was moved and seconded that this be done. Carried.

PRESIDENT CORBETT: Two of our members are confined to bed, men whom we miss and whose absence we feel very keenly. Dr. Bell wanted the pleasure to be with us even as sick as he was, and he asked me to come over for a conference with him so that he could acquaint me somewhat with the things that he knew were of vital interest to the organization, so that he could keep in touch with us. Dr. Hill has also been sick. I believe a resolution was introduced in the case of Dr. Hill at a preceding meeting of the House of Delegates, but I think it would be a nice thing to send greetings in some way also to Dr. Bell. What is your wish in this matter?

DR. W. A. JONES: Dr. Bell is getting better, and I hesitate about sending a congratulatory message from the state association when a man is sick.

PRESIDENT CORBETT: You think it would be unwise to do that?

DR. JONES: That is what I think about it.

DR. LITZENBERG: Would not a resolution thanking him for his services to the association and our pleasure at his recovery cover it?

DR. JONES: That is better.

DR. LITZENBERG: I make such a motion.

Seconded and carried.

PRESIDENT CORBETT: I believe, except for the announcement of the Council meeting, which comes the last thing, that completes our business schedule, does it not?

DR. DRAKE: Except that we have had no report from the Secretary or Treasurer.

PRESIDENT CORBETT: That is one of the first things I should have called for. I will now call for those reports.

Dr. Drake then read the Secretary's report and also the report of the Treasurer.

REPORT OF THE SECRETARY

The fifty-fourth annual meeting of the Minnesota State Medical Association convenes with a paid membership of 1,815, this being an increase of 171 over that reported at our last meeting at Duluth in August, 1921.

Our membership by component societies is as follows:

Aitkin County	5
Blue Earth County.....	25
Blue Earth Valley.....	26
Camp Release	44
Carlton County	8
Central Minn. District.....	10
Chisago-Pine	13
Clay-Becker	25
Dodge County	8
Freeborn County	14
Goodhue County	14
Hennepin County	436
Houston-Fillmore	26
Kandiyohi-Swift	18
Lyon-Lincoln	16
McLeod County	9

Meeker County	11
Mower County	18
Nicollet-LeSueur	15
Olmsted County	225
Park Region	38
Ramsey County	283
Red River Valley	47
Redwood-Brown	21
Rice County	23
St. Louis County	146
Scott-Carver	16
Southwestern Minn.	53
Stearns-Benton	38
Steele County	14
Upper Mississippi	71
Waseca County	12
Wabasha County	13
Washington County	12
Watsonwan County	7
West Central	20
Winona County	22
Wright County	13

Total Membership1,815

The treasurer's report gives the detailed financial standing of the association to date, the report having been certified to by the financial committee of the Council. Last year it was voted in the House of Delegates to request the Councilors to have the accounts of the Association audited by some one of the regular auditing companies. The Council did not authorize such a procedure but at the request of President Corbett in the early part of this year, a financial report of the Association to January 1, 1922, was certified to by an accountant and later checked by the financial committee of the Council.

The Association income for the year is approximately \$18,900; expenses, approximately \$16,800. This leaves a net cash gain for the year of more than \$2,000.

During the year a system has been established whereby weekly reports are made to the A. M. A. Journal of news items for publication under the heading of Minnesota. The sending in of such items to the state secretary's office need not be limited to officers of the county societies and all Association members are urged to co-operate in this rather important branch of the Secretary's work.

Throughout the year, the office of the Secretary has furnished clerical service for the Committee on Public Policy and Legislation, entailing no additional expense to the Association for this special work.

The Secretary frequently receives queries regarding new locations from physicians throughout the state. Occasionally, notice of available locations is also received. The Association office could easily be made a clearing house for such information and the success of such an undertaking, which has actually been begun, lies with Association members. Relying on medical journal advertisements is slow and generally unsatisfactory.

C. B. DRAKE.

REPORT OF THE EXECUTIVE SECRETARY

The past year has been one of the most successful in the history of your association, particularly with respect to gain in financial resources and increase in membership.

At the Duluth convention there was reported a paid membership of 1,644, which was a gain of 101 over the previous year. The present paid membership is 1,815, an increase for the past year of 171. In the number of members of the state society in proportion to the number of physicians practicing in the state, Minnesota now ranks among the highest in the country.

While every component society has made a good showing, Olmsted County (Rochester) shows the largest gain in membership for the year, having increased its membership from 100 in August, 1921, to 225 for October, 1922.

The business statement for the year's work shows a net cash income over and above all expenses of \$2,111.84 and an increase in net assets of \$2,437.23. During the year \$2,700.00 of the Association funds were invested in a real estate

mortgage, bearing interest at 7 per cent. This brings the total amount invested in securities to \$6,700.00. The following is a detailed statement of the income and expenses for the past year and of the present financial condition of the Association:

MINNESOTA STATE MEDICAL ASSOCIATION BUSINESS STATEMENT

August 18, 1921-October 8, 1922

RECEIPTS

1922 Membership dues—1,815 members @ \$5.00	
per year	\$ 9,075.00
Back dues collected—	
1920	16.00
1921	175.00
Advance dues—1923	5.00
Total dues collected	\$ 9,271.00
Interest on investments and daily bank balance...	461.61
Receipts from subscriptions and advertising in	
MINNESOTA MEDICINE	8,179.72

Total income of Minnesota State Medical Association from all sources.....\$17,912.33

EXPENSES

Salaries	\$ 1,550.00
Legal Expense	1,412.09
(Moore, Oppenheimer, Peterson & Dickson)	
MINNESOTA MEDICINE	11,428.33
Duluth Convention	803.58
(Dr. Bloodgood—Badges and Cards, Whitford for reporting meeting, Program)	
Council meeting, March 14, 1922.....	103.60
Legislative Committee	42.00
Premium on surety bonds of Treasurer, General Secretary and Executive Secretary	40.00
Audit of books.....	70.00
Incidentals	309.36
Interest	41.53

Grand Total of all expenses incurred by the Minnesota State Medical Association from August 18, 1921, to October 5, 1922..... 15,800.49

Net cash income over expenses for the year....\$ 2,111.84

The total net assets of the association at the present time is:

Bonds	\$ 4,000.00
Real Estate Mortgage.....	2,700.00
Cash in bank	3,903.44
Accounts Receivable (MINNESOTA MEDICINE)....	1,920.69

\$12,524.13

from which should be deducted \$260.00 for MINNESOTA MEDICINE accounts considered of doubtful value, leaving the net total assets of the association on this date \$12,264.13.

J. R. BRUCE.

MINNESOTA MEDICINE REPORT

Dr. Farr has prepared a very complete report of MINNESOTA MEDICINE and my report will, therefore, be limited to a brief statement of the conditions we are working under and the income and expenses for the past year.

You all know of the serious business depression with which we have had to contend for the past two or three years. This has been an especially trying period for publications of every character and few, if any, have escaped serious loss in revenue. Under the circumstances, it has been difficult to increase or even maintain our usual volume of advertising in the journal. However, MINNESOTA MEDICINE has weathered the storm very nicely and has been able to hold its advertising and show a small gain.

These conditions, practically every one agrees, are improving, though the improvement is likely to be gradual. Under the circumstances it is reasonable to expect a gain in the sale of advertising space for the ensuing year, due in part to improved business conditions and to the greater prestige which the journal now enjoys. It should be borne in mind that we are restricted in the sale of advertising space, our list of prospects in medicinal lines being limited to those products and firms approved by the council. This policy, however, is a wise one and enables the Editing and Publishing Committee to keep the advertising columns clean and in harmony with the high editorial character of the publication.

The following is a detailed report for the past year:

MINNESOTA MEDICINE RECEIPTS

Money remitted for subscriptions and advertising in Minnesota Medicine from August 18, 1921, to October 8, 1922	\$ 8,179.72
Subscription credit—1,815 members @ \$2.00....	3,630.00
Accounts receivable October 5, 1922.....	1,920.69
Total	\$13,730.41

MINNESOTA MEDICINE EXPENSES

Printing expense	\$ 5,651.58
Paper stock	1,342.76
Bruce Publishing Company, commission on advertising for fourteen months... (The Bruce Publishing Company is allowed a commission of 30% on all advertising obtained direct and 5% on all advertising obtained through the Co-operative Medical Advertising Bureau.)	2,203.29
In addition it is allowed a special stenographic fee of \$30.00 per month....	420.00
And actual postage for mailing of magazines in Saint Paul, telephone, telegrams, etc.	132.00
Envelopes for mailing	73.80
Editorial expense, including editor's salary, newspaper clippings and illustrations	1,568.70
Miscellaneous	36.20
Accounts receivable August 18, 1921...	1,335.30
Total	12,763.63
Net surplus for year.....	\$ 966.78
J. R. BRUCE, Business Manager.	

REPORT OF THE TREASURER OF THE MINNESOTA STATE MEDICAL ASSOCIATION

October 12th, 1922

AT MINNEAPOLIS

DEBIT

Cash on hand August 18, 1921.....	\$ 4,491.60
N. P. Bonds	4,000.00
Minnesota Medicine	8,179.72
Membership Dues	9,271.00
Interest	461.61
(On investments and daily bank balance)	
	\$26,403.93

CREDIT

MINNESOTA MEDICINE	\$11,428.33
Interest	41.53
Salaries	1,550.00
Sundries	2,780.63
(Including legal expenses, convention expenses, reporting of convention and incidentals.)	
Investments	6,700.00
(Real Estate Mortgage and Bonds.)	
Cash on hand Oct. 8, 1922.....	3,903.44
	\$26,403.93
F. L. BECKLEY.	

PRESIDENT CORBETT: What is your wish in regard to these reports?

It was moved that the reports be accepted and published. Seconded and carried.

PRESIDENT CORBETT: Unless there has been some other item that has escaped us in the way of new business, and if there is I should like to have you remind me of it, this winds up our program. Is there anything we have omitted?

DR. SAVAGE: I have written a tentative letter in this respect, that neither Dr. Tuohy nor Dr. White has passed judgment on yet, but the Committee on Legislation proposes to send a copy of its new bill to every member of the state association together with a copy of some such letter as this, subject to the approval of Dr. Tuohy and Dr. White. I feel, and I think everybody feels, that in the future stability of the practice of medicine in the State of Minnesota this proposed new law is one of the most important things that has come before the state association. I don't want to take the time of the delegates here to read that letter, but simply state that it is a letter that we propose to send to every member of the state association, together with a copy of the bill.

PRESIDENT CORBETT: I think it would be well to have this letter read. I think we have the time for it. And if there is no objection, I will ask the secretary to read that letter.

SECRETARY DRAKE: "Dear doctor: Enclosed is a copy of the proposed basic medical practice act which was adopted by the House of Delegates of the Minnesota State Medical Association on October 12th of this year. As near as we can ascertain it is pioneer legislation, although Iowa is doing somewhat the same thing this year. In its essentials this bill makes every man who proposes to practice any form of medicine in Minnesota, satisfy a board of four men who do not practice medicine, but who are able to qualify as experts in anatomy, physiology, chemistry and pathology, that the applicant is sufficiently grounded in these four fundamental subjects, to protect the public from incompetent men who practice the art of healing. And after passing such an examination or presenting certificates from other states that satisfy this board as to the required other qualifications, they are given a certificate by the board. * * * * * Those desiring to practice osteopathy and chiropractic are permitted to be examined in the other subjects pertaining to their particular branch of the healing art. Then the examining board on basic science is empowered to establish minimum standards of preliminary education. It seems to the committee on public health legislation that physicians have a certain duty to perform to safeguard the public from quackery and from incompetent men who propose to practice some form of healing. The converse of this is true, that if medical men do not assume this function and do not protest against vicious legislation, any cult will obtain legal recognition for anything they may ask, and no opposition is interpreted by members of the Legislature as stamping any given measure with the approval of the medical men. The time of preparation for the successful introduction of this bill is short. Your committee is sending a copy of this letter and the bill to every member of the Minnesota State Medical Association. If you are a member of one of the eleven county societies who have not an organized committee on legislation, will you consider yourself as a member of such a committee?"

If you are a member of a county society which has such a committee, will you co-operate with them in every possible way? We are anxious to have the support of every candidate for both the Senate and House, for this bill, and to have their pledges of support prior to the election next month. A report to the chairman of this committee from the chairman of each county committee by November 15, would be greatly appreciated. Chairman, Committee on Public Health Legislation, Minnesota State Medical Association."

A MEMBER: What was the date for the answer in that letter?

DR. DRAKE: November 15th.

DR. W. A. JONES: Do I understand the Legislative Committee have been instructed to introduce this bill?

PRESIDENT CORBETT: They have.

DR. W. A. JONES: Regardless of what the political atmosphere will be?

PRESIDENT CORBETT: I think that question has been overlooked. I take it, it was the notion of this House of Delegates that we approve this bill and recommend its introduction. Possibly this point is well taken; possibly it might be very inadvisable to do it. However, we have gone on record, according to my interpretation. Now, do we wish to modify this or change it?

DR. W. A. JONES: I don't want to make any change in it, except I am wondering whether it is a safe procedure unless the Legislative Committee have canvassed the situation sufficiently and know they have enough friends in both houses so that they are sure the bill will go through. I think the medical profession is in a very deep hole at the present time with the legislative body, and they are apparently taking great delight in doing anything they can to keep us down. They will favor the chiropractic in place of the medical man, unless some very good missionary work is accomplished. Rather than go down to defeat, I think the legislative committee ought to be instructed not to introduce the bill unless they feel some assurance of its passage.

PRESIDENT CORBETT: I want to say in this connection that this is only half of the fact, the osteopaths and chiropractors are going to introduce a bill of their own. You must not forget that.

DR. MILLSPAUGH: Mr. President, those of us who know something about what this committee accomplished last year, I think, feel perfectly safe to leave this matter with the committee. I think Dr. Jones' point is well taken, that if it seems there is no possibility of this bill passing it should not be introduced. But the committee, and Dr. Savage, are in close touch with the situation and I think it should be left to them. I think it should also be left to him or the committee that in case there is no possibility of this bill passing, that they should substitute some other bill, or not necessarily bill, but take some action to oppose any bills that the osteopaths may introduce. I feel perfectly safe in leaving this matter with the committee.

DR. SAVAGE: When this meeting started I asked a gentleman here if there was any fight on and I told him that it was a pity we couldn't have some kind of a fight. He said no that there was no such thing, so I am glad to say something on the situation a year ago last winter, which was a deplorable one. I am very glad Dr. Litzenberg is here today. The medical men have been completely lulled to sleep

by the so-called Litzenberg resolution, when Dr. Litzenberg, as chairman of the Committee on Legislation in the meeting at St. Paul of the House of Delegates, without a word of discussion, had them adopt his report which was an attitude of,—well extreme elevation you might call it, that the osteopaths and the chiropractors or any other cults be left free to do anything they wanted; that there should be no opposition by medical men except that if our advice were called for, we would graciously render them the advice—

DR. LITZENBERG: That is an entire mis-statement of the resolution, and I call upon the secretary to read that part of the resolution.

DR. SAVAGE: I object to Dr. Litzenberg's interruptions until after I finish. Now, the situation from the standpoint of the legislators is just this: I spoke to Jim Denegre, who is in the Senate, and whom I have known for a long time, about this situation, and he said, "You are crazy." He said that no opposition is interpreted as a tacit consent on the part of the medical men. Consequently, I think it was Dr. Robert Earl who finally woke up the committee, and we had a special meeting in Dr. Riggs' office after this bill had had, I think, its second reading in the House and had gone to the committee of the House on public hospitals, and then it was decided to make a fight. The first vote on the bill was something like 58 to 49 in favor of this osteopathic bill, and then with comparatively little effort the final vote was 59 to 58 in favor of the osteopathic bill. Fortunately enough men were absent so that they didn't quite have a majority and the bill never came to a vote in the Senate. Dr. Litzenberg says I am wrong in interpreting—

DR. LITZENBERG: Absolutely, we will have the resolution read.

DR. SAVAGE: The report of that committee was my interpretation of the resolution, and that of every other member of the committee on legislation, and the similar interpretation of Dr. Cross and Dr. Christison and also the president.

DR. LITZENBERG: Are you through?

PRESIDENT CORBETT: Dr. Savage has the floor.

DR. LITZENBERG: As soon as the resolution is read you will see that the whole trouble arose because the committee did not do what it was instructed to do.

PRESIDENT CORBETT: Now, I want to pour a little oil on the waters, it isn't the resolution or anything of that kind, but we are facing an entirely different situation. We have got to win and that is all there is to it. Now we are organized, and we are in better shape than we ever were before, for anything. We never have been organized as well as we are now, and the desire is at the present time to fight. We have only got one enemy to fight and that is the quack, and we are fighting the quack in the interests of humanity more than we are in the interests of the medical profession. It is not a quarrel among doctors or schools of doctors, it is a fight for humanity and we are organized. The die is cast, we cannot suppress this thing now, the step has been taken. We have got to go ahead, win or lose. Pardon me for discussing this thing in the Chair, but I feel so strongly on this that I cannot help saying this. Suppose we do lose, it is a glorious defeat and a defeat in the interests of humanity. I think Dr. Savage

may well be proud of this, however it comes out before the Legislature. I do not favor temerity or hesitation, but go ahead, burn your bridges behind you and win. Many a battle has been won in the face of defeat, and I would say the die was cast so far as this society is concerned.

DR. LITZENBERG: I would like to ask the President if he has read Dr. Green's report to the American Medical Association. Dr. Green said that the medical men had never won a lobby fight in the United States, that the cults had won out every time ultimately, because of the lobbying of the medical profession which put them in the position of lobbyists.

They have accomplished more in the state of Ohio where they have adopted this method than they ever did before. It is not original with Litzenberg; it is Ohio that gave us the idea we had in mind. It is the first state in the Union where they did it, and they did it not by lobbying. It is entirely misinterpreting the spirit of the resolution,—it is too long to read, but that resolution carried with it the duty of that committee to go to each of the committees of the House and lay before them the attitude of the medical profession that we were not lobbying. You lose every time that you lobby because you don't know a thing about it; the politicians will skin you alive. But that doesn't mean, and the resolution doesn't mean, not to work. It means that the committee is to be on the job, not in lobbying with members of the Legislature, but influencing committees, getting in touch with those committees and being on their trail all the time and to give them the information which they want. It strengthens your position immeasurably. I recommend that you read the resolution, on page 592, which your committee adopted that year.

May I say that the chairman of that committee single-handed, assuming that attitude in the Legislature that year, defeated everything that came up that was inimical to the public health welfare, simply by getting hold of the chairman of the Senate committee and explaining to him just exactly what this meant, that we were for the health of the people and not in the interests of the medical profession. That one man defeated everything in the legislature that year, and if he had lobbied or tried to get votes we would have gone down to an ignominious defeat. The spirit of that resolution is simply not to use the usual methods. Please read it, please get that record before your committee, it was simply that we wouldn't use the usual methods of lobbying, but that we change our methods and center our efforts on the committees on public health legislation and tell them we are not out lobbying for votes. You don't need to lobby for votes; if you simply concentrate your efforts on those committees, you can beat them every time.

DR. SAVAGE: I might say that this committee this year has changed its methods. When this osteopathic legislation came up nothing had been done, I am willing to admit that the committee went to sleep up to that time. This year the situation is this, that 27 of the 28 component county medical societies have organized committees on legislation. Eleven have not. We have heard from two of those eleven since then, and we believe that we can count on the support of the medical men. Now, it isn't a matter of lobbying so much as it is a matter of education, and to tell them what we want. We feel that we can go before

the members of the Legislature and explain to them that this is a matter of public welfare; that we feel that we have some measure of duty to perform in acting as a guardian of the public health. If the medical men don't do it, who is to do it? Nobody. The osteopaths and chiropractors and any other cult will get anything they want.

DR. PLONDKE: One suggestion to the committee that they have possibly overlooked. In the work I did a couple of years ago in reference to clinic week, I was surprised to see how many men around the country were not members of the Minnesota State Medical Association, and I want to make this suggestion to the Association, to see if there is some possible way of getting in touch with those men through the members of the state association. While they can do much through the society, still if these legislators are approached by members of the society, they are apt to go to some one who is not a member of the society, and who not understanding the situation and not having read this bill might say to them, it is just jealousy on the part of the society. But if the members could give the committee help in that way, I think it would be of material assistance.

Dr. T. L. Chapman advocated that the Publicity Committee work through the secretaries of the various county societies and get in touch with members who are not affiliated with the state association.

PRESIDENT CORBETT: I think that is a matter for the county societies, but I would be glad to entertain a motion that the county societies be urged to complete their organizations.

DR. CHAPMAN: I so move.

Seconded and carried.

DR. HAMILTON: Two years ago this organization went on record in favor of a psychopathic hospital to be established at the University. We would like to bring that up before the legislature again, and we would like to say that we have the support of this organization. Is the action already taken sufficient, or should we ask for it again?

PRESIDENT CORBETT: I think it might be well to introduce a motion.

DR. HAMILTON: I make that motion.

Seconded and carried.

PRESIDENT CORBETT: I will appoint Dr. Workman and Dr. Beebe as a committee to escort the new president to the platform, in place of the ones I previously appointed.

(For Dr. Judd's speech of acceptance, see minutes of the joint meeting.)

As there was no further business to come before the meeting, on motion, duly seconded and carried, the House of Delegates adjourned sine die.

THE MINNESOTA STATE MEDICAL ASSOCIATION 1922

MINUTES OF THE MEDICAL SECTION

Chairman, Dr. J. G. Cross, Minneapolis; Secretary, Dr. David Berkman, Rochester.

FIRST DAY—FRIDAY, OCTOBER 13th

The first session of the Medical Section of the Fifty-fourth Annual Meeting of the Minnesota State Medical Association was called to order in the Engineering Building of the University of Minnesota, at 9:40 A. M., by the Chairman.

Dr. Walter E. King, St. Paul, read a paper on "The Training of the Laboratory Technician." Discussed by Dr. G. B. Kramer, St. Paul, and closed by the essayist.

Dr. Moses Barron, Minneapolis, presented a paper on "The Value and Importance of Blood Chemistry in Clinical Medicine." Discussed by Dr. E. L. Gardner, Minneapolis.

Dr. Norman N. Keith, Rochester, read a paper entitled: "Some Unusual Post-Operative Pulmonary Complications." Discussed by Drs. E. L. Tuohy, Duluth, and L. A. Nippert, Minneapolis.

Drs. Harold Rypins and D. Stern, Minneapolis, presented a paper on "The 'Local' Wassermann Reaction: A New Diagnostic Aid in Primary Syphilis." Discussed by Drs. H. G. Irvine, Minneapolis; Paul O'Leary, Rochester, and Henry E. Michelson, Minneapolis, and closed by Dr. Stern.

Dr. Henry Wireman Cook, Minneapolis, read a paper on "A Visual Albuminuria Guide." No discussion.

Dr. Margaret Warwick, St. Paul, presented a paper on "The Value of Routine Coagulation and Bleeding Time in New-born Infants." Discussed by Dr. F. C. Rodda, Minneapolis.

Dr. Edgar T. Hermann, St. Paul, presented a paper entitled: "Milk Transmission of Pollen Hay Fever." Discussed by Drs. Henry L. Ulrich, Minneapolis; Charles N. Henzel, St. Paul; S. Amberg, Rochester, and W. Ray Shannon, St. Paul, and the discussion closed by Dr. Hermann.

Dr. R. Edwin Morris, St. Paul, presented a paper entitled: "Strophanthus—Kombe Laboratory and Clinical Considerations." Discussed by Dr. Morris.

Dr. Kano Ikeda, Minneapolis, read a paper on "Standardization of Laboratories and Technicians." Discussed by Dr. R. O. Beard, Minneapolis.

MINUTES OF THE SURGICAL SECTION

Chairman, Dr. E. K. Green, Minneapolis; Secretary, Dr. E. M. Jones, St. Paul.

FIRST DAY—FRIDAY, OCTOBER 13th

The first session of the Surgical Section was held in the Anatomy Building of the University of Minnesota, and was called to order at 9:00 A. M. by the Chairman.

Dr. Arthur T. Mann, Minneapolis, read a paper entitled "Diaphragmatic Hernia," which was discussed by Drs. Warren A. Dennis, St. Paul; Arnold Schwyzer, St. Paul; Jennings C. Litzenberg, Minneapolis, and in closing by the essayist.

Dr. H. A. H. Bouman, Minneapolis, read a paper on "Cysts of the Pancreas." This paper was discussed by Dr. Arnold Schwyzer, St. Paul.

Dr. W. E. Sistrunk, Rochester, followed with a paper entitled "Results Obtained in Elephantiasis through the Kondolean Operation." This paper was discussed by Dr. Robert E. Farr, Minneapolis, after which the discussion was closed by the essayist.

Dr. J. S. Rothrock, St. Paul, read a paper on "Dysmenorrhea," which was discussed by Drs. Jennings C. Litzenberg, Minneapolis; W. A. Coventry, Duluth, and in closing by the essayist.

Dr. J. R. Manley, Duluth, read a paper entitled "Injuries to the Birth Canal." This paper was discussed by Dr. Albert G. Schulze, St. Paul, and in closing by the essayist.

Dr. J. S. Crenshaw, Rochester, read a paper entitled "A

Review of One Hundred Fifty-three Cases of Bladder Stone Removed by Lithotripsy."

Dr. G. J. Thomas, Minneapolis, read a paper on "Diagnosis and Treatment of Ureteral Stones."

These two papers were discussed together by Drs. G. J. Thomas, Minneapolis; William F. Braasch, Rochester; F. E. B. Foley, St. Paul, after which the discussion was closed by the essayists.

Adjourned.

JOINT MEETING OF THE MEDICAL AND SURGICAL SECTIONS

The meeting was held in the Engineering Building of the University of Minnesota and was called to order at 2 P. M. by Dr. S. H. Boyer, Duluth, First Vice-President.

The President, Dr. J. Frank Corbett, Minneapolis, delivered his address. He selected for his subject "Problems of the Medical Profession, Past and Present."

Dr. E. Starr Judd, Rochester, followed with a paper entitled "Surgery of Acute Gall-Bladder Conditions," which was discussed by Drs. H. B. Sweetser, Minneapolis; Warren A. Dennis, St. Paul; Archibald McLaren, St. Paul; Waltman Walters, Rochester, and in closing by the essayist.

Dr. A. S. Hamilton, Minneapolis, read a paper entitled "The Psychopathic Hospital." This paper was discussed by Drs. W. A. Jones, Minneapolis; George D. Head, Minneapolis, and in closing by the author of the paper.

Dr. Charles Lyman Greene, St. Paul, read a paper entitled "Significant Changes in Heart Outline Following Rational Treatment," which was illustrated with lantern slides. The paper was discussed by Dr. J. G. Cross, Minneapolis, and in closing by the essayist.

Dr. Robert Emmet Farr, Minneapolis, illustrated the application of local anesthesia by motion pictures and animated drawings.

Adjourned.

SECOND DAY—SATURDAY, OCTOBER 14th

The second session of the Medical Section of the Fifty-fourth Annual Meeting of the Minnesota State Medical Association was called to order in the Engineering Building of the University of Minnesota, at 9:20 A. M., by the Chairman.

Dr. O. C. Melson, Rochester, read a paper on "Diagnosis of Uterine Malignancy." Discussed by Dr. R. D. Mussey, Rochester, and the discussion closed by Dr. Melson.

Dr. A. T. Laird, Nopeming, presented a paper on "The Relation of the General Hospital to the Tuberculosis Sanatorium." Discussed by Dr. E. S. Mariette, Glen Lake, and the discussion closed by the essayist.

Dr. Henry S. Plummer, Rochester, read a paper entitled: "Myxedema." Discussed by Dr. S. Amberg, Rochester, and the discussion closed by Dr. Plummer.

Dr. O. J. Hagen, Moorhead, read a paper on "The Clinical Diagnosis of Gastric and Duodenal Ulcer." Discussed by Dr. E. L. Tuohy, Duluth, and closed by Dr. Hagen.

Dr. A. C. Baker, Fergus Falls, presented a paper entitled: "Tuberculous Peritonitis." Discussed by Drs. W. J. Marclay, Minneapolis; E. S. Mariette, Glen Lake, and the discussion closed by the essayist.

Drs. H. Z. Giffin and J. P. Bowler, Rochester, presented

a paper entitled: "Diseases Associated with Pernicious Anemia." Discussed by Drs. J. P. Schneider, Minneapolis; E. L. Tuohy, Duluth, and the discussion closed by Dr. Giffin.

Dr. Charles R. Ball, St. Paul, read a paper on "The Present Status of Medical Opinion Concerning the Nature, Diagnosis and Prognosis of Encephalitis Epidemica." Discussed by Drs. C. Eugene Riggs, St. Paul, and S. Amberg, Rochester.

SATURDAY, OCTOBER 14, 1922

SECOND SESSION OF THE SURGICAL SECTION

The Section met at 9 A. M. and was called to order by the Chairman.

Dr. Waltman Walters, Rochester, read a paper entitled "Preoperative Preparation of Patients with Obstructive Jaundice." This paper was discussed by Drs. F. J. Plondke, St. Paul; Arnold Schwyzer, St. Paul; Arthur T. Mann, Minneapolis, and in closing by the essayist.

Dr. E. C. Robitschek, Minneapolis, read a paper entitled "Traumatic Rupture of the Spleen." This paper was discussed by Drs. Arthur T. Mann, Minneapolis; A. R. Colvin, St. Paul; Arthur Bratrud, Minneapolis, after which the discussion was closed by the author of the paper.

Dr. John T. Rogers, St. Paul, read a paper on "Diverticulitis of the Colon," which was discussed by Dr. Gustav Schwyzer, Minneapolis, and in closing by the essayist.

Dr. Donald Bacon, St. Paul, read a paper on "Essentials in the Treatment of Peritonitis." This paper was discussed by Drs. A. R. Colvin, St. Paul; R. E. Farr, Minneapolis; A. E. Benjamin, Minneapolis, and Arthur N. Collins, Duluth.

Dr. Arthur E. Benjamin, Minneapolis, read a paper entitled "The Causes, Repair and Management of Postoperative Abdominal Hernia," which was discussed by Drs. Earl Hare, Minneapolis; Arnold Schwyzer, St. Paul; Robert Emmet Farr, Minneapolis, and in closing by the essayist.

Dr. O. S. Wyatt, Minneapolis, read a paper on "Cerebral Pneumography as an Aid in the Early Diagnosis of Hydrocephalus." This paper was discussed by Drs. K. Ikeda, Minneapolis; A. W. Adson, Rochester; F. E. B. Foley, St. Paul, and in closing by the essayist.

Dr. Emil S. Geist, Minneapolis, read a paper on "Heliotherapy in Infectious Disease of the Bones and Joints." This paper was discussed by Drs. J. H. Bendes, Oak Terrace; Arnold Schwyzer, St. Paul; Dr. Benjamin, Texas, and in closing by the essayist.

Adjourned.

GENERAL SESSION

The general meeting was held at 2 P. M. and was called to order by President Corbett, who said:

The first item of business is the installation of the President-elect, and I have appointed a committee of two members to find and escort Dr. Judd to the platform. I feel that our time is so limited as to preclude extensive introductory remarks, which would deprive the essayists of what time is left.

Dr. Judd was escorted to the platform, and President Corbett, in introducing him, said: I am going to ask Dr.

Judd to say a few words, but before doing so I want to tell him that he has the rather unusual distinction in the method of his election. His election was unanimous in the House of Delegates, and considering the applause that greeted him when he came to this platform, I believe he will assume the duties of President-Elect under very auspicious circumstances.

Dr. Judd, in accepting the presidency, said: I appreciate this honor more than I can tell you. I also feel the responsibility of taking this office. It does seem to me though that we had an unusual expression of spirit at the alumni meeting, and considering the spirit that has prevailed throughout this meeting we ought to be able to have a very successful year. If I can carry out things anywhere near as well as the former President, I shall certainly be very happy. I thank you all very much for the great honor you have conferred upon me. (Applause.)

The Secretary gave the following summary of the proceedings of the House of Delegates:

Your Secretary wishes to report a registration of 409 members at this year's meeting. The total membership of the association is 1,815, which is a net increase of 171 over last year's membership,—a substantial gain.

There has been a net increase in the income of the Association over the expenses of about \$2,000.00. About \$900.00 remains on the credit side of the publication of MINNESOTA MEDICINE, that is, within the amount allowed MINNESOTA MEDICINE from the membership fees and income from the publication.

The Council and House of Delegates met on two different days and recommended the bill for the establishment of a common examining board for those practicing the healing art. This bill was discussed freely both in the Council and House of Delegates, and was recommended by both bodies for presentation to the legislature when it convenes this fall.

A committee was authorized to be known as the Gorgas Memorial Committee to help raise funds for the establishment of an institute at Panama, to be known as the Gorgas Memorial Institute for the Study of Tropical Diseases. Efforts are being made to raise six millions and a half of dollars to endow the institute.

A woman's auxiliary of the Minnesota State Medical Association was formed by a group of the wives of the members of the Association at a meeting held yesterday. There has been a woman's auxiliary in the State of Texas for some time, and they took occasion at the meeting of the American Medical Association, held at St. Louis, to form a National Auxiliary Association, and the women in this state have formed an organization, and Mrs. H. B. Sweetser, of Minneapolis, was elected President, and Mrs. Rood Taylor was elected Secretary.

At a meeting of the House of Delegates held this morning the following officers were elected for 1923: President-Elect, Dr. E. Starr Judd, Rochester; First Vice-President, Dr. E. Bratrud, Warren; Second Vice-President, Dr. Harry P. Ritchie, St. Paul; Third Vice-President, Dr. J. S. Mesker, Olivia; Secretary, Dr. Carl B. Drake, St. Paul, re-elected, and Treasurer, Dr. F. L. Beckley, St. Paul, re-elected. Place of meeting, St. Paul, 1923. Councilor for the Second District, Dr. J. G. Millsbaugh, Little Falls; Councilor for the

Third District, Dr. Warren A. Dennis, St. Paul; Councilor for the Fifth District, Dr. H. M. Workman, Tracy; Delegate to the American Medical Association, Dr. J. L. Rothrock, St. Paul; Alternate Delegate, Dr. J. Frank Corbett, Minneapolis.

THE PRESIDENT: You have heard the report of the Secretary. Unless there is objection, we will consider it adopted.

There is nothing remaining for us except to adjourn, but before adjourning I wish to impress upon every one the importance of registering.

Adjourned.

THIRD SESSION—OCTOBER 14

The Surgical Section met at 2:30 P. M. and was called to order by the Chairman.

Dr. M. S. Henderson, Rochester, read a paper entitled "Surgical Treatment of Infantile Paralysis," which was discussed by Drs. Emil Geist, Minneapolis; Wallace Cole, St. Paul, and in closing by the essayist.

Dr. A. E. Wilcox, Minneapolis, read a paper entitled "Painful Shoulder." This paper was discussed by Drs. Emil Geist, Minneapolis; M. S. Henderson, Rochester, and Wallace Cole, St. Paul.

Dr. A. C. Strachauer, Minneapolis, read a paper entitled "Congenital Pyloric Stenosis," which was discussed by Drs. F. C. Rodda, Minneapolis; J. T. Christison, St. Paul; Robert Emmet Farr, Minneapolis; H. B. Sweetser, Minneapolis; S. Amberg, Rochester, and in closing by the essayist.

Dr. W. R. Meeker, Rochester, read a paper entitled "The Use of Nerve Block Anesthesia in General Surgery," which was discussed by Drs. S. R. Maxeiner, Minneapolis; Robert Emmet Farr, Minneapolis; A. C. Strachauer, Minneapolis, and in closing by the essayist.

Dr. Laura Lane, Minneapolis, read a paper entitled "A Study of the Tonsil Question with a Preliminary Report of X-Ray and Radium Therapy in the Treatment of Pathological Tonsils," illustrated by lantern slides. This paper was discussed by Dr. Bissell, Minneapolis.

Dr. H. A. Beaudoux, Minneapolis, read a paper entitled

"Some Important Features in the Diagnosis and Operative Treatment of the Sinuses."

Adjourned.

AFTERNOON SESSION

The third session was called to order at 2:30 P. M. by the Chairman.

Dr. Everett K. Geer, St. Paul, read a paper entitled: "Bilateral Induced Pneumothorax." Discussed by Dr. E. S. Mariette, Glen Lake.

Dr. Hugh S. Willson, Minneapolis, presented a paper entitled: "Treatment of Duodenal Ulcer." Discussed by Dr. J. P. Schneider, Minneapolis.

Dr. Max Scham, Minneapolis, presented a paper entitled: "Handling of Heart Diseases in Children."

Dr. Walter R. Ramsey, St. Paul, presented a paper entitled: "Importance of a Longer Period of Rest in Bed with Medical Supervision, in Order to Prevent Heart Lesions Following the Infectious Diseases." Discussed by Drs. Rood Taylor, Minneapolis; T. L. Birnberg, St. Paul, and the discussion closed by Dr. Ramsey.

Dr. Carl O. Kohlbray, Duluth, presented a paper entitled: "Status Thymico-Lymphaticus in Infancy." Discussed by Drs. F. W. Schlutz, Minneapolis; Rood Taylor, Minneapolis; S. Amberg, Rochester, and the discussion closed by Dr. Kohlbray.

Dr. C. P. Robbins, Winona, presented a paper entitled: "Observations and Experiences on Six Hundred Duodenal Drainages." No discussion.

Dr. Rood Taylor, Minneapolis, presented a paper entitled: "Chronic Intestinal Indigestion in Infancy and Early Childhood." No discussion.

Dr. W. Ray Shannon, St. Paul, presented a paper entitled "Non-Specific Irritation: A Precipitating Cause of the Anaphylactic Diseases of Infancy and Childhood." Discussed by Dr. S. Amberg, Duluth, and the discussion closed by the essayist.

As this concluded the program the Medical Section adjourned at 5:45 P. M., *sine die*.

MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association, Southern Minnesota
Medical Association and Minneapolis Surgical Society*

Vol. VI

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No. 3

ORIGINAL ARTICLES

I. THE FUTURE OF THE SOUTHERN MINNESOTA MEDICAL ASSOCIATION*

WILLIAM F. BRAASCH

Section on Urology

Mayo Clinic, Rochester, Minnesota

The present status of the sectional medical society is somewhat anomalous. In many instances such societies were formed before the establishment of state associations; in others they were established because of the weakness of independent or sparsely settled county societies. Occasionally, geographical barriers or excessive distances, separating various portions of the state, warranted their organization, and in a few instances factional disturbances and selfish motives prompted it.

The birth of the Southern Minnesota Medical Association may be considered as quite legitimate. Without going into the details of its honorable history, the nucleus of this association was formed in Winona in 1892, 30 years ago, and geographically incorporated the southern tier of counties in the state. In 1911 it was joined to the Minnesota Valley Medical Association, which had been in existence since 1880, both societies being dissolved and the present society formed. Since then it has grown from a society numbering less than 100 to its present enrollment of 460. The excellence of its programs has attracted visitors from all parts of this state, as well as from surrounding states, and has achieved national recognition. In this manner the latest progress in the various fields of medicine has been brought by recognized authorities within the reach of every member of the Society. Its remarkable growth was largely due to the energy and resourcefulness of our retiring Secretary-General, Dr. A. F. Schmitt, and in the resolutions passed this afternoon we have endeavored to show our appreciation of this.

The Southern Minnesota Medical Association has now reached another period in its development. It would be well to consider that the present status has not been attained without criticism from without as well as from within. It has been claimed that, by the development of two programs yearly of the magnitude of our recent programs, the resources of the state are so divided that the State Association suffers. It has even been inferred that it is the intention of the Society deliberately to overshadow the State Association. I feel certain that this last assertion needs no denial. It is possible, however, that a division of the medical resources of the state, particularly when employed in semi-annual sectional meetings, might interfere to some extent with the development of a state-wide program. The Society is also not without criticism by its own members. The adherents of sectionalism maintain, and not without reason, that we have grown away from our original purpose of neighborly meetings. It is claimed by certain members that the program has been given over to distinguished guests and specialists to such an extent that it has become top-heavy, and the small contributor has but little opportunity to be heard. In answer to this, I need only describe the difficulties of those who have endeavored to assemble a medical program; they have found it almost impossible to secure papers from general practitioners. The expense of carrying on the ambitious programs is necessarily so great as to become a financial burden to some of the members. However, it has not been generally realized that two meetings a year cost twice as much as one. Furthermore, in order to insure a large attendance it has been necessary to assume considerable expense in sending out notices, securing speakers, presenting attractive programs, and many other incidentals too numerous to mention.

As you know, at the business meeting today, a number of radical changes were made in our constitution and by-laws. It has been decided to have but one meeting a year, and on a date that will least interfere with the meeting of the State Asso-

*President's address before the Southern Minnesota Medical Association at Mankato, Minnesota, December 4, 1922.

ciation. The annual dues have been reduced so that they will not be a burden. The members in Mankato have generously conceded an amendment which permits the annual meeting to be held in any of the available cities of southern Minnesota. I for one should like to have it held in Mankato on alternate years.

What of the future of this association? I am sure we are all agreed that we should carry on. There is need of a sectional meeting to fill in the gap between meetings of the state society. I am sure that none of us would want this society to compete with the senior organization, but rather would want it to supplement and aid it, wherever possible. The junior association should assist in establishing a spirit of harmony and friendship not only in our own ranks, but among the profession of the entire state. Unless the members of the medical profession work together to perfect their organizations to meet the attacks of well-organized cults, they will suffer for it individually in the future. It may be said of the Southern Minnesota Medical Association that our house is in order, our business cleared away, and we are ready to meet the demands of the future. I believe we should, in a measure, continue some of the attractive features of our programs. At the same time, our Society should afford a common meeting place where the general practitioner and the specialist may exchange ideas. I believe that we may rest assured that the Southern Minnesota Medical Association will flourish and continue to live up to its splendid history of the past.

II. THE RELATION OF THE GENERAL PRACTITIONER TO THE UROLOGIST

The question of how to adjust the relation of the general practitioner to the specialist so that the best interests of the patient may be conserved is a common problem. This is particularly true in the practice of urology in which temporary diseases of the urinary tract, which soon disappear with little or no treatment, present symptoms very similar to those of serious lesions in which the patient's chance of recovery depends on early recognition. The general practitioner has the advantage, which the urologist usually does not have, of observing the first symptoms of lesions of the urinary tract. This may be fortunate for the urologist since the symptoms observed in the acute early stages of urinary diseases are often very confusing, making correct diagnosis difficult. When the disease has

become more or less chronic it is more easily recognized and may be made the subject of more exact study. It is true that every patient who has clinical evidence of disease involving the urinary tract does not need the services of a urologist with the appearance of the first symptoms. There are, however, definite indications and a definite time when such consultation is necessary for the purpose of accurate diagnosis and for the welfare of the patient. Without going into detail it might be of some practical value to outline the significance of some of the common symptoms observed with surgical conditions in the urinary tract.

HEMATURIA

A careful study of the various types of hematuria is of the greatest clinical importance, and from it much can be discovered concerning the nature of the disease and its localization. For clinical purposes, cases with hematuria may be divided into two groups, those with and those without bladder symptoms such as frequency, dysuria or urinary obstruction. Hematuria without bladder symptoms is usually of renal origin. The two most common renal lesions involved are neoplasm and essential hematuria. Hematuria with renal neoplasm is usually characterized by profuse bleeding for a short time, seldom longer than a day or two. When it is continuous over a period of weeks or months it is rarely due to renal neoplasm but often indicates the condition which, for want of a better term, is called essential hematuria. This condition, as we know, is seldom of a serious nature and the patient usually recovers after rest in bed for a week or two. If the hematuria persists, injections of silver nitrate through the ureteral catheter into the renal pelvis will usually suffice to stop the bleeding. Therefore, profuse hematuria of short duration without bladder symptoms demands careful investigation as soon as possible, since it is obvious that if renal neoplasm is present its removal in the early stages offers the best chance for recovery.

Hematuria occurring with bladder symptoms is more confusing. If both bleeding and bladder symptoms disappear in the course of a few days, the lesion may be but a passing infection. If they persist longer or recur at infrequent intervals, there is usually a surgical condition present and the patient should be referred at once for careful urologic investigation, since tumors of the bladder are frequently the cause of such symptoms.

Differentiation of a passing urinary infection and a vesical neoplasm in its early stages is probably the source of greatest confusion. The general practitioner may be justified, in the presence of a short attack of hematuria, with vesical symptoms, in giving the patient temporary measures such as urinary antiseptics, rest in bed, and so forth. But should there be a repetition of these symptoms, or should they be prolonged for more than a few days, he is doing the patient a grave injustice if he does not advise urologic investigation. All too often patients are seen with tumor of the bladder, who have had either repeated attacks of dysuria or constant dysuria with hematuria, and who have been kept under treatment with urinary antiseptics and so forth, by the family physician, for a period of six months or even a year, without an attempt having been made to ascertain the cause of the symptoms. As a result the patient's chance for recovery by surgical treatment has been greatly reduced and in some instances entirely lost.

It is also of importance in diagnosis to ascertain the time of appearance of the blood in the urine, and whether all of the urine is hemorrhagic. According to such classification the following groups may be recognized: (1) all of the urine is hemorrhagic, (2) the urine is hemorrhagic only at first, rapidly clearing as micturition continues, (3) the urine is clear at first, becoming hemorrhagic at the end of micturition, and (4) the urine is partially clear, but contains a few drops or particles of un-mixed blood. The possibility of renal involvement is to be considered, only if all of the urine is hemorrhagic; this condition is rarely present with the other types of hemorrhage. If the first urine is hemorrhagic and the last portion is clear, the lesion is usually in the urethra. If only the last of the urine is hemorrhagic the lesion is in the bladder or possibly in the posterior urethra. If but a few particles of blood are found in the urine, the bleeding may be either from the bladder or the urethra, and cause inflammation.

URINARY FREQUENCY

Of equal importance are the various types of urinary frequency. It is impossible to give in a few words rules which would cover all of the types, but there are indications of the three most important, namely the types occurring in the young adult, in the male in the prostatic age, and in the female. Since renal tuberculosis usually occurs between the ages of 20 and 40 and is characterized

symptomatically by persistent diurnal urinary frequency with pyuria, such symptoms should be considered as due to renal tuberculosis until proved otherwise. It is possible for every general practitioner to make this diagnosis by demonstrating acid-fast bacilli in the urine. The technic involved is identical with that for detecting bacilli in the sputum, but requires greater persistency and the examination of many specimens of urine. As in cases of vesical neoplasm, it is surprising how many patients come to the urologist with advanced renal tuberculosis, for whom no attempt has been made to ascertain the cause of bladder symptoms which have existed for months and even years.

Frequency in the female may be due to a variety of causes, most often to a passing colon bacillus infection which persists for a week or two and then disappears. Should it persist, further investigation should be made. Although irritation caused by pressure of the pelvic organs is often ascribed as the cause, this rarely is the cause and it should not be considered as a common etiologic factor.

One of the most difficult conditions that the general practitioner is called on to treat is that of urinary obstruction resulting from prostatic hypertrophy. As a rule, these patients are well along in years and their general condition is none too good. The bladder symptoms resulting from prostatic obstruction are usually characterized by gradual onset and initial nocturia. Sooner or later the well-known obstructive symptoms will appear, and may be heightened by secondary cystitis or the formation of stone in the bladder. The frequency accompanying chronic prostatitis with cystitis may be confusing, but the absence of residual urine and the variations in the character of the prostate on rectal palpation will usually differentiate the two conditions. The urinary frequency resulting from vesical neoplasm is usually accompanied by a variable degree of hematuria. However, it should be emphasized that every case of urinary frequency and dysuria persisting more than a few weeks demands further investigation. In the treatment of acute infection of the bladder or kidneys, rest in bed and forced fluids are important measures. An intake of 2,000 or 3,000 c.c. of fluid should be insisted on. Hexamethylen is of doubtful value although in some instances, if given in large doses, it seems to be beneficial. In other cases it causes increased frequency and disturbs the stomach. In cases of fever, hot packs once or

twice daily are of the greatest value. It should be remembered, also, that every case of urinary infection, no matter how temporary, must have a focus of infection and such a focus should be found and removed.

PROSTATIC OBSTRUCTION

Patients are often observed by the urologist who have been treated by the general practitioner for prostatic obstruction, but in whom frank carcinoma of the prostate, evident on rectal examination, has been overlooked. It is evident that the common occurrence of prostatic malignancy is not generally appreciated. As a rule, the firm, nodular, irregular gland is easily recognized on rectal palpation, and a special knowledge of urology should not be necessary to differentiate hypertrophy and carcinoma. It should be unnecessary to repeat that rectal palpation is routinely necessary in the adult male who has symptoms of disease in the urinary tract. It is surprising how often patients are observed who have had a recent prostatectomy elsewhere in whom rectal palpation reveals a diffuse recurring carcinoma of the prostate which had been unrecognized prior to operation and even at operation. Needless to say, if carcinoma of the prostate exists, prostatectomy is rarely indicated. If recognized early, great improvement and prolongation of life can be expected from thorough treatment by radium.

PAIN WITH URETERAL OBSTRUCTION

Another source of confusion is the recognition of abdominal pain caused by a lesion in the urinary tract. Unfortunately the radiation of pain caused by obstruction in the kidney and ureter, particularly of stone in the lower ureter where the pain is often localized to the lower lateral abdominal quadrant, is not always typical of renal involvement. When the stone is on the right side the symptoms are often confused with those of appendicitis. Many an innocent appendix has been sacrificed and the underlying condition unrecognized. It has been argued that it is better to sacrifice a normal appendix occasionally than to overlook a fulminating appendicitis. In the absence of localized tenderness, fever and high leukocyte count, however, delay would be justified at least until an examination of the urine and possibly a roentgenogram of the urinary tract had been made. Another source of confusion is in the fact that symptoms simulating acute intestinal obstruction are occasionally observed with an impacted stone in the ureter.

The vomiting may not be so severe and the radiation of pain may not be typical of intestinal obstruction, and if on urinalysis microscopic blood or pus is found, further investigation including roentgenograms and cystoscopy is indicated.

RENAL STONE

In the presence of stone in either the kidney or ureter, a single attack of pain seldom warrants surgical removal of the stone. It is now recognized that the majority of the urinary stones less than 1 cm. in diameter will pass spontaneously. However, it is well to know in what portion of the urinary tract the stone is situated, whether it is too large to pass spontaneously, whether there is acute secondary infection present, and whether there is impaction. One of the most alarming conditions resulting from impaction of stone in the ureter or renal pelvis is calcareous anuria. When one kidney is thus acutely occluded there is often a reflex inhibition of secretion of the other kidney as well. As a result the amount of urine secreted is reduced to a minimum and symptoms of uremia may soon follow. Unless the condition is recognized at once and the stone removed, fatal complications rapidly result. Therefore, after repeated colics, or when pain continues over a period of several days to a week, further investigation including roentgenograms and cystoscopic examination is imperative.

INSTRUMENTATION

In certain acute conditions of the urinary tract, instrumentation is not well tolerated and unless skillfully done may result in serious complications. Fortunately fewer false passages are made since the steel catheter is used less and the filiform guide is used more. The family physician is often called on to treat the patient during an attack of acute urinary obstruction resulting from prostatic hypertrophy or stricture of the urethra. He is often not equipped with the proper instruments and makes repeated attempts to relieve the bladder with the catheters that he may have at hand. As a result there is considerable trauma and consequent infection of the urethra and prostate which is extremely dangerous since the infection may be carried from the urethra into the blood stream and into the kidneys, often with fatal results. The physician is placed in a quandary. The patient must be relieved and the physician is unable to introduce the catheter into the bladder and may be too far distant from the urologist to secure immediate assistance. Having the patient sit in hot water and

applying rectal suppositories and so forth may not alleviate the condition. In such cases suprapubic drainage with local anesthesia would be advisable, rather than repeated attempts to catheterize the bladder. If the bladder is distended well above the pubis special precautions are necessary. This is true whether a catheter is successfully introduced into the urethra or whether suprapubic drainage is made. It is now generally recognized that sudden drainage of such bladders may result fatally. The bladder should be emptied gradually, preferably over a period of 24 hours, the catheter being allowed to remain in place during this time.

CONCLUSIONS

It would be impossible in a brief discussion such as this to consider all of the sources of confusion which may arise in the recognition of the various lesions of the urinary tract. My chief purpose is to emphasize the salient clinical data which would lead the practitioner to suspect the presence of malignancy, tuberculosis or lithiasis. It is evident that early intelligent observation and advice of the general practitioner is of the greatest importance to the patient suffering with disease involving the urinary tract; furthermore, that the early recognition of surgical conditions and co-operation with the urologist are large factors in the patient's recovery.

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS

ARTHUR C. STRACHAUER, M.D.

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Minneapolis

Congenital hypertrophic pyloric stenosis consists in a massive hypertrophy of the circular muscles of the pylorus causing a true stenosis of the pyloric canal and a mechanical obstruction to the outlet of the stomach. This massive hypertrophy of the circular musculature results in the development of a non-inflammatory, sharply defined pyloric tumor mass of unknown etiology, measuring from three-quarters of an inch to an inch or more in length and from five-sixteenths to seven-sixteenths of an inch in diameter, being of a firm, nearly cartilaginous consistency, covered with smooth, glistening peritoneum free from adhesions, and having a whitish, pale color as compared with the rest of the stomach and duodenum. This lesion has been ob-

served in a seven months' fetus, and on a number of occasions in the still-born, and would, therefore, seem to be a developmental overgrowth. As a result of this tumor formation, the pyloric canal becomes greatly lengthened and stenosed, in itself producing a mechanical obstruction, in addition to which the very bulk of the tumor mass constitutes a further impediment.

While a spastic contraction of the pyloric muscles may at times operate to increase the degree of the obstruction, the lesion of congenital hypertrophic pyloric obstruction should not be confused with pyloric spasm, which latter is a functional and temporary phenomenon, usually yielding to appropriate medical treatment and management.

In addition to the pyloric hypertrophy, careful examination in some cases has shown definite hypertrophy of the musculature of the stomach, the cardia and lower portion of the esophagus. Secondary to the obstruction a gastric dilatation with atony and a gastritis commonly develops, the degree depending upon the duration of the obstruction.

The condition occurs most frequently in male, breast-fed infants, the symptoms beginning at the end of the second week of life and becoming alarming by the third week. Cases referred to the pediatrician and surgeon are seen most frequently at the fourth and fifth week. The picture presented is that of a robust, well-nourished infant suddenly developing symptoms of "shooting," "explosive" vomiting. This vomiting is continuous after each meal. With obstruction and vomiting follow the symptoms of dehydration and acidosis, scanty urine, the absence of stools or the presence of small, meconium-like stools consisting of bile and mucus, and rapidly progressing loss of weight. These little folks shrivel up, the skin becoming dry and inelastic. Either subnormal temperature or fever may be present. Visible gastric peristalsis is a common and important finding. This peristalsis is at times so vigorous and prominent as to be observed by the mother. In one such instance the mother, mainly on this finding, became alarmed and brought the infant from a distance out of town to the hospital.

On palpation of the abdomen there is usually absence of tonic or clonic spasticity of the abdominal musculature, that is, absence of muscle rigidity and spasm. Downes considers the palpation of the pyloric tumor in the upper right quadrant of the abdomen of the greatest importance. He states that by emptying the stomach of gas by passing a tube

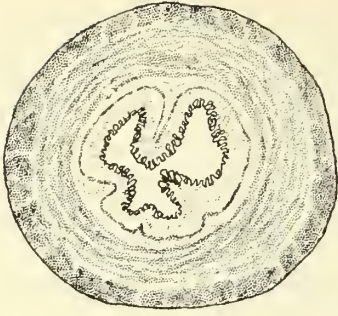


Fig. 1. Cross section of normal pylorus, magnified 5 times.

and relaxing the child by giving the bottle, the pyloric tumor can be palpated in practically every case. This has not obtained in our experience, and the clinical picture has been so definite that palpation of the tumor has not been necessary for purposes of diagnosis. The roentgen-ray examination of the stomach has been employed to ascertain the degree of pyloric obstruction and meal retention. Strauss considers a seventy per cent four hour retention, in addition to the other symptoms, an indication for surgery. The degree of gastric retention may be determined by aspiration through a stomach tube. While we have made these roentgen-ray examinations, we have not found them helpful or necessary, the clinical picture being so definite and reliable. In fact, the roentgen-ray study may be confusing and in itself does not help to differentiate between pyloric stenosis and spasm.

There is no field of surgical endeavor in which intimate co-operation between the physician and surgeon is more important than in the surgery of infancy, and much of the success which I have achieved has been due to the sharing of the responsibility for the patient while in the operating room and to the very skilful pre-operative and post-operative care by the pediatrician. Likewise, in my series of cases the selection of the surgical cases and recommendation for surgery has been made by the pediatrician. In this connection it should be stated that there have been no diagnostic errors. The medical treatment should not be persisted in until inanition and dehydration have progressed to such a degree that death is imminent and the patient then be brought to the surgeon. Nevertheless, by filling these little folks up with fluids, subcutaneously and by enteroclysis, sufficient improvement can be obtained to permit of successful operative correction.

In the early efforts at surgical treatment of congenital hypertrophic pyloric stenosis, pylorotomy

and pyloroplasty were practiced, with a resulting prohibitive operative mortality. Divulsion of the pylorus, or the so-called Loreta operation, by the introduction of dilators through a small gastrotomy, while not so dangerous, did not, in the majority of cases, give the desired relief from the obstruction. Anterior or posterior gastroenterostomy performed with a jejunum the size of a clothes-line and a small infant stomach, is an extremely difficult, hazardous undertaking. The successful cases were in the main, however, fairly satisfactory, but the operation was attended by a mortality approximating 33.3 per cent, and the evidence at hand is to the effect that while the lesion was relieved it was not cured.

Fredet, a Frenchman, practiced submucous pyloroplasty by making a longitudinal incision down to the mucosa and then performing transverse suturing of the longitudinal incision. Rammstedt performed a longitudinal submucous pyloroplasty without any suturing, and this latter operation has become the operation of choice, in that it is simple, can be rapidly performed, gives complete relief, and is an extremely safe procedure.

Immediately prior to the beginning of the operation, the stomach tube should be passed to empty the stomach of gas and any contents that may be present. The operation should be performed through a short, upper right rectus or paramedial incision just long enough to permit of the delivery of the pyloric tumor and so short as to prevent evisceration. An incision an inch and a half long usually suffices. In the ideally performed operation not even a single loop of intestine should es-

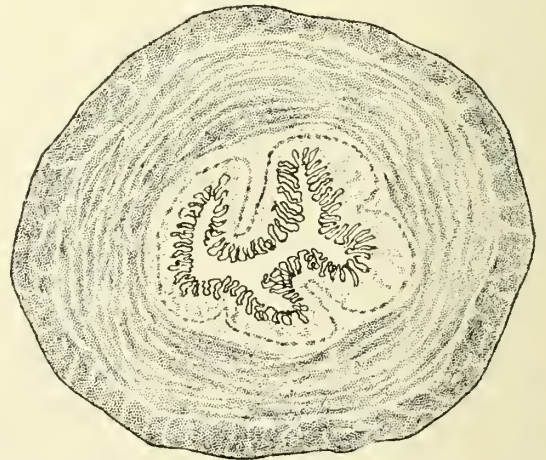


Fig. 2. Cross section of pylorus in case of hypertrophied pyloric stenosis, magnified 5 times.

cape from the abdominal cavity. The exposure incident to the protrusion of such loops of bowel and the manipulation necessary to their reduction and return to the abdominal cavity is one of the most important factors in the production of shock. With the pyloric tumor held between the thumb and index finger of the operator's left hand, a longitudinal incision is made through the muscles the entire length of the pyloric tumor. The upper surface of the pylorus being relatively free from larger blood vessels is selected for the site of the incision. Upon the exposure of a portion of the mucosa by incision, the remainder of the liberation of the mucosa is performed bluntly, by using the handle of the scalpel and by spreading with blunt forceps to avoid perforation of the mucous membrane, which is most thin and delicate, particularly at the duodenal portion. Personally, I have found a curved Carmault hemostat most satisfactory for this spreading. The mucosa is freely liberated at the depth of the incision, which must extend well on to the stomach beyond the pylorus and likewise into the duodenum. This liberation must be absolutely complete, otherwise a few undivided fibres may act like an obstructing ligature. All bleeders are sutured, and a free portion of the omentum is sutured to the upper margin of the incision to protect the raw areas from becoming adherent to the liver or other adjacent structures, such an occurrence having produced postoperative obstruction with death. The pylorus is now returned to the peritoneal cavity, and the wound rapidly closed in layers, a generous number of through and through stay sutures being inserted, as these emaciated infants lack normal powers of repair and healing.

The operation should be rapidly and delicately performed, with minimal traumatization to the infant. The surroundings attending the operation on these extremely extra-hazardous cases should be ideal in every detail. A trained surgical team is indispensable to smooth and rapid work. The operation may be very satisfactorily performed under local anesthesia, but we have found ether as administered by a skilful anesthetist, familiar with the requirements of pediatric surgery, less time consuming and most satisfactory. The quantity of ether used and the duration of the anesthetic is kept down to the minimum, the anesthetic not being started until absolutely everything is in readiness for the operation and stopped at the earliest possible moment. Under such conditions the operation

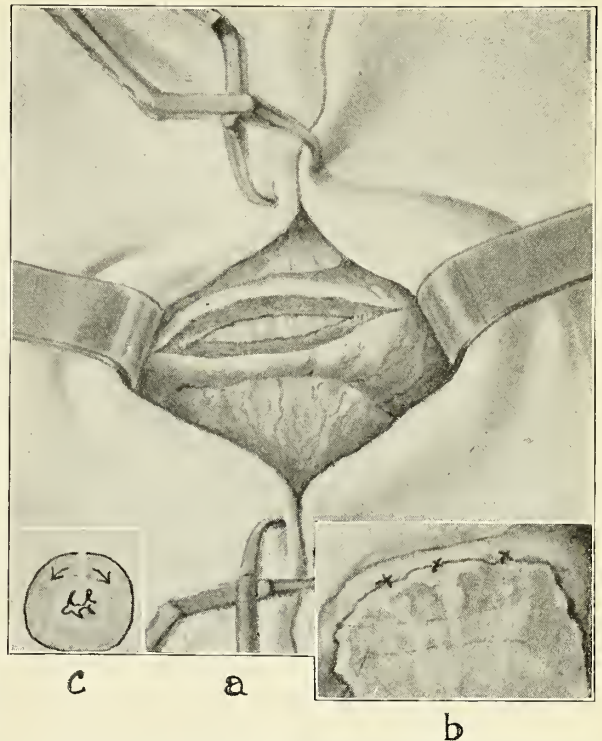


Fig. 3. Rammstedt Operation: Illustration a, showing longitudinal incision through the pyloric tumor mass. The hypertrophied circular muscles have been divided and spread, showing the liberated mucosa of the pyloric canal below.

Illustration b, omental flap sutured over the Rammstedt incision to prevent objectional adhesions to the liver or other near-by structures.

Illustration c, cross section of pyloric tumor mass. Division of the circular muscles results in retraction in the direction shown by arrows, with subsequent atrophy and permanent disappearance of the pyloric tumor mass. The encroachment on the pyloric canal by infolding of its mucosa is immediately relieved.

from the time of the making of the incision to the completion of the suturing of the skin has been performed in fourteen minutes.

The temperature of the operating room should be 80 degrees F., or higher. All drafts are excluded from the room. The child is wrapped in cotton batting, surrounded by hot water bottles, and carefully fastened to the operating table. Scrupulous attention to the smallest details is essential to success. For example, the temperature of the hot normal saline solution employed for the hot abdominal packs and compresses is maintained at 110 degrees F. by thermometer reading in the solution, thus avoiding the shock produced by either too hot or too cold temperatures. Even the alcohol used for preparing the abdomen is warmed. The attention to hemostasis is most important. Infants do not withstand the loss of blood at all well, even in small amounts. Hemorrhage with these little ones is synonymous with shock.

Following the operation the child is wrapped in

warmed blankets and taken to its crib, which has been thoroughly heated by a number of hot water bottles. Feedings are promptly begun, in three to four hours, after the operation. In my series of cases the pediatrician has directed practically all of the postoperative care except the actual care of the wound. A highly trained and experienced pediatric nurse is invaluable during the postoperative and convalescent period.

The Rammstedt operation is indicated in practically all cases of congenital hypertrophic pyloric stenosis which have not responded to medical treatment and management. The preoperative and postoperative treatment as outlined is absolutely essential to success and is equally important to the operative intervention. The Rammstedt operation not alone relieves the immediate obstruction but permanently cures the lesion, as confirmed by autopsy findings in patients dying in six months to one and a half years following operation, death being due to other conditions, as pneumonia, etc.; the examinations showed no trace of the former pyloric tumor, the pylorus, in each case, being normal in every respect, the only findings being light omental adhesions at the site of the scar. The division, as performed in the Rammstedt operation, of the circular muscles surrounding the pylorus like a ring, results in a retraction of the muscles with a resultant permanent disuse atrophy. In contradistinction to this, roentgen-ray pictures taken in two cases of gastroenterostomy performed for congenital hypertrophic stenosis showed all of the barium passing through the gastroenterostomy openings thirteen and fourteen years after the performance of the operation, proving that the pyloric obstruction had continued. Subsequent operation or necropsy has likewise demonstrated the presence of the tumor years after the performance of gastroenterostomy in a number of cases collected by Holt.

The clinical picture of congenital hypertrophic pyloric stenosis is so definite and clear-cut that the diagnosis can practically always be made without recourse to laboratory, roentgen-ray, or other special examinations. Early recognition and the prompt institution of appropriate treatment are most important, as the disease, in those cases which terminate fatally unless prevented by operative intervention, runs a very rapid and short course.

CASE REPORTS

In the following case reports it is to be noted that only one patient is a female.

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS

(Case of Baby B. J. Northwestern Hospital, 72)

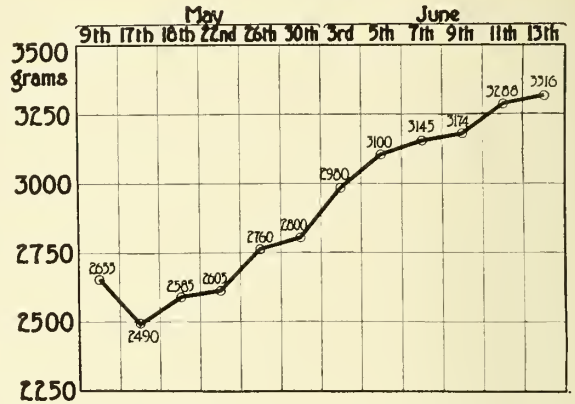


Fig. 4. Photograph of nurse's chart in Case 10. Note loss of weight from the 9th to the 17th of May, under medical management. Rammstedt operation performed May 18th, followed by cessation of vomiting and the establishment of normal stools. The gain in weight was immediate. The gain in weight from May 17th to 18th was due to the fluids by hypodermoclysis.

Case 1. Baby girl H. N. Breast-fed. Projectile vomiting; obstipation; vigorous visible gastric peristalsis. Rammstedt operation, June 20, 1919. Uneventful recovery.

Case 2. Baby boy W. C.; age, 6½ weeks. Weight at birth, 8 pounds. Breast-fed every four hours. Patient began vomiting ten days ago; projectile in character. Visible gastric peristalsis. Last bowel movement five days ago. X-ray study shows marked peristalsis over stomach with practically no barium passing through pylorus. Rammstedt operation, Feb. 9, 1920. Uneventful recovery.

Case 3. Baby boy P. W.; age, 7 weeks. Projectile vomiting; absence of stools; visible vigorous peristalsis; extreme emaciation and dehydration. Rammstedt operation, July, 1920. Uneventful recovery.

Case 4. Baby boy S. University Hospital (20076). Rammstedt operation for typical case of hypertrophic pyloric stenosis, Nov. 1, 1920. Recovery and immediate increase in weight.

Case 5. Baby boy R. B.; age, 4 weeks. Weight at birth, 9 pounds. Breast-fed. Projectile vomiting, 3 to 4 feet from child. Visible peristaltic waves. Rammstedt operation, February 16, 1921. Weight at operation, 3400 grams. Weight on March 20, 1921, 4000 grams.

Case 6. Baby boy G. K.; age, 5 weeks. Only child; two weeks premature. Weight at birth, 5 pounds, 14 ounces. Breast-fed. Began vomiting two weeks ago; projectile in type. Peristaltic waves visible over stomach. Rammstedt operation, March 31, 1921. At the age of six weeks weighed 6.3 pounds. Discharged April 11, weighing 7.3 pounds.

Case 7. Baby boy R. H.; age, 7 weeks. One month premature. Weight at birth, 5 pounds, 9 ounces. Breast-fed. Had jaundice three weeks ago. Practically no bowel movements even with enema in last week. Vomiting for last three weeks. Marked dehydration and emaciation. Prepared for operation. Rammstedt operation, June 24, 1921, at 11 A. M. Patient died one hour later.

Case 8. Baby boy A. R.; age, 2 weeks. Only child. Weight at birth, 9.3 pounds. Breast-fed. Began vomiting

one week ago; projectile vomiting lasting five days. Visible peristalsis. X-ray study showed large, dilated stomach; pylorus obstructed. Patient markedly dehydrated on entrance. Weight, 6.7 pounds at operation. Rammstedt operation, July 14, 1921. Uneventful recovery. Discharged two weeks later, having gained 615 grams.

Case 9. Baby boy G. R. B.; age, 3 weeks. Weight at birth, 7 pounds. Weight on entrance to hospital, December 10, 1921, 6 pounds, 6.5 ounces. Vomiting last week, projectile in character, lasting four days. Visible peristalsis over stomach. Rammstedt operation, December 13, 1921. Patient discharged December 25, 1921, weighing 6 pounds, 14 ounces.

Case 10. Baby boy R. S.; age, 7 weeks. Weight at birth, 7 pounds. Weight on entrance to hospital, May 18, 1922, 5.5 pounds. Marked visible peristalsis. Projectile vomiting. Rammstedt operation, May 18, 1922. Uneventful recovery. Weight, June 19, 7 pounds, 12 ounces.

Case 11. Baby boy S. J.; age, 7 weeks. Weight at birth, 10 pounds; on entrance to hospital, June 26, 1922, 8 pounds, 1 ounce. Marked dehydration. Large peristaltic waves seen over stomach. Projectile vomiting. Rammstedt operation, June 28, 1922. Patient discharged on July 12 weighing 9.7 pounds.



Fig. 5. Photograph of Case 12. Increase of 5½ pounds in seven weeks following operation.

Case 12. Baby boy R. T.; age, 2 weeks. Weight at birth, 9 pounds. Weight on entrance to hospital, June 28, 1922, 8 pounds, 1 ounce. Complaints, vomiting and absence of bowel movements. Vomiting since June 23. Rammstedt operation, June 30, 1922. Patient discharged July 12, weighing 8.6 pounds.

Case 13. Baby boy E. H.; age, 7 weeks. Weight at birth, 8 pounds; at four weeks weighed 11 pounds. Three weeks later weighed 7 pounds, 11 ounces, on date of operation. Projectile vomiting; no bowel movements. Rammstedt operation, October 7, 1922. Uneventful recovery and increase in weight.

Case 14. Baby boy T. D.; age, 3.5 weeks. Two weeks premature. Weight at birth, 6 pounds, 2.5 ounces. Projectile vomiting, lasting ten days. Constipation. Visible gastric peristalsis. Weight on entrance, 5 pounds, 12 ounces. Rammstedt operation, October 6, 1922. Patient doing well; three normal stools on fifth day after operation.

Case 15. Baby boy S.; age, 9 weeks. Admitted to Abbott Hospital at age of 3 weeks. Weight at birth, 7 pounds,

10 ounces. Weight on entrance, 8 pounds, 3.2 ounces. In hospital under medical treatment forty-one days, without improvement or weight increase. Rammstedt operation, October 21, 1922. Uneventful convalescence. Letter from mother, November 3, 1922, states that baby is symptom-free and gaining in weight.

Case 16. Baby boy C. A.; age, 7 weeks. Admitted to the University Hospital, Oct. 27, 1922. Projectile vomiting and visible peristalsis. Weight 2830 grams. Medical management, gastric lavage before feedings, unsuccessful. Rammstedt operation, November 1, 1922. Prompt cessation of vomiting; establishment of normal stools; uneventful recovery.

The literature contains an occasional report of congenital hypertrophic pyloric stenosis in the adult. One such recent report was made before the American Surgical Association by Dr. John C. Oliver of Cincinnati, who successfully treated his case by the Rammstedt operation. The following case was operated upon by the writer at the University Hospital.

B. M., male, age 21 years; admitted to the University Hospital November 2, 1916, on the verge of death from starvation. He was in such an advanced state of emaciation and dehydration that he was unable to sit up, and could scarcely talk. The patient had been an undernourished, delicate child; the mother had difficulty in "bringing him up." He had never been strong, and had "spells" of vomiting immediately after meals during his entire life. These had increased in frequency during the last twelve months, accompanied by great loss in weight. Some several years previously, following one such "spell," his weakness was so great as to make walking difficult for him, and he was admitted to an osteopathic hospital, in Austin, Minnesota, under the diagnosis of "mild paralysis."

Following a preoperative preparation of hypodermoclysis and enteroclysis, he was operated upon under local anesthesia. The pylorus was occupied by a firm, whitish, glistening tumor mass of cartilaginous consistency and free from any adhesions. This tumor mass was identical in every respect with the type found in congenital hypertrophic pyloric stenosis in infancy. The stomach was extremely di-

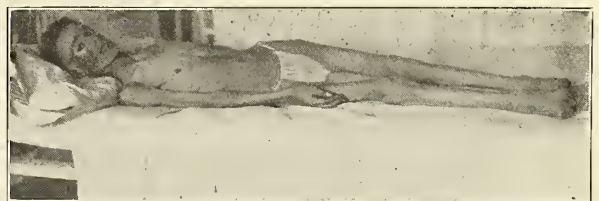


Fig. 6. Photograph of Case 17. Emaciation and weakness so great that patient could neither stand nor sit up.

lated and atonic. A posterior gastroenterostomy was performed. An uneventful recovery followed, the patient gaining in weight and strength at an extremely rapid rate, and was soon able to be up and walking.

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DISCUSSION

DR. F. C. RODDA, Minneapolis: In the discussion of Dr. Strachauer's very comprehensive paper I shall confine my remarks to emphasizing important points he has brought out.

Of the etiology of this strange disease, we know nothing. As to its incidence, I am inclined to think it is much greater than we used to believe. We have always one or more of these cases under our care, and in discussing the subject with men who are engaged in general practice, I find there are a goodly number of these cases throughout the country all the time.

Practitioners in the country may think that in cases of this kind they could make the diagnosis more readily if they had access to the x-ray and laboratory technique. But the fact of the matter is the clinical picture is unique and diagnosis may be made solely from observation. The x-ray has not been particularly valuable in our cases. You do not need a leucocyte count or anything else, but simple observation and the elicitation of a careful history. The clinical picture is this: a child born at full term, normal delivery, breast-fed, doing nicely for about fourteen or sixteen days, then begins to vomit a small amount of food. Presently it vomits after every feeding. The vomiting becomes projectile in type, and may be shot out of the mouth to a distance several feet from the baby's mouth. The child vomits from one feeding to the other until practically no food is retained. This is quickly followed by another train of symptoms which is the result of deficiency of food and water. There is a rapid loss of weight, oliguria, and little or no stools at all for periods of days. The child becomes very much dried out and dehydrated. If one looks carefully he will find, in addition to signs of dehydration, large peristaltic waves coming out under the left edge of the ribs and rolling across to the right. The peristaltic waves are not pathognomonic for pyloric stenosis, since they are often seen or found in pyloric spasm. But in the latter condition vomiting is not so persistent. Feeding may be returned for many meals or even days when there is relaxation of spasm. These children do not lose so rapidly in weight, and they usually pass a reasonable quantity of urine and stool.

A word or two about the preoperative and postoperative care which we feel is very important. After many years we have been able to outline a definite regimen for the care of these cases. The night before operation, it is our custom to give from eight to ten ounces of normal salt

solution subcutaneously. This is repeated at six o'clock the next morning, and through the night normal saline solution is given by enteroclysis. About four hours before operation, four or five ounces of water is given by gavage. By these measures we attempt to flood the system with water and get the child in the best shape to withstand the operation.

Dr. Strachauer has emphasized the technique, and I would emphasize the importance of keeping the child warm and being given as little anesthetic as possible. We have not had a fatality in quite a large series of cases.

As to postoperative treatment, these babies need food and water. We begin to give them water as quickly as vomiting has subsided after the anesthetic, as early as one hour. Beginning from two to three hours after operation we give small amounts of food. You would not feed a man who had been starving for a number of days a large quantity of food, you would give him small amounts. The same applies to these babies. We start with small amounts, one-half of an ounce every four hours, then an ounce, and gradually increase the quantity as rapidly as the baby will tolerate it. These babies will occasionally regurgitate a small amount of food. That does not mean that the operation is unsuccessful, but rather that the child has an enormously dilated stomach and some retention of food.

DR. J. T. CHRISTISON, St. Paul. It seems eminently fitting that the pediatrician should be called upon to discuss the subject of hypertrophic pyloric stenosis, for after all it is he who really decides when the surgeon should or should not operate. Our good friend, Dr. Sedgwick, myself and a number of others, in discussing this subject a few years ago and reporting our cases, thought it was not necessary to operate upon these children; that they could all be cured without recourse to surgery. At that time we really felt this was true. We were prone to divide these cases into two classes, pyloric spasm and pyloric stenosis, one on the right hand, and the other on the left, and if our case got well we decided it was pyloric spasm and not stenosis. If the child did not get well it was a bad stenosis, and we were ill advised because we did not have it operated upon early enough. The more I see of these cases, the more I am inclined to believe that there is but little difference between pyloric spasm and pyloric stenosis, in so far as treatment is concerned. A casual observation of the child lying on the table shortly after feeding should enable one to make a diagnosis without difficulty. We are inclined to believe that enlargement of the pyloric end of the stomach is not so much a true hypertrophy as it is an edema. You can take these masses between your fingers and they feel like rubber, and after an incision has been made, if the surgeon will squeeze a little bit he will get a whole lot of fluid out of it and the thing soon shrinks.

It is unnecessary for me to refer to the after-care of these children. After the decision has been reached for operation, the most important thing is to conserve the strength of the child, and to avoid shock. Really, the surgery does not amount to so very much. A few hours after the operation we begin to feed these babies. Some one has said that you can, if you are careful, palpate this tumor. I do not know whether I am careful or not, but I know that I can not do it. I can feel things, and nine times out of ten I am feeling the inner border of the liver, but when I stand

at the operating table and watch the surgeon open the abdomen, I am sure that is what I felt. It is necessary to feel these things, but the point is this: if you are going to do an operation on these children, do it early enough so that you will get prompt and good results. Do not let the child get into a condition of emaciation and dehydration, where it has lost anywhere from 30 to 50 per cent of its original weight, and expect it to come back.

When you take one of these children and put it into a hospital, and feed it for a period of six or eight weeks, the parents get tired of it. If you can do an operation that takes from ten to fifteen minutes, and show them on the chart during the next forty-eight hours that the child's weight is beginning to increase and it is retaining its food, they like that much better, and there will be no difficulty in getting consent to early operation.

DR. R. E. FARR, Minneapolis: I can subscribe to almost everything that has been said in relation to this subject. However, I wish to emphasize some of the points that have been made. Dr. Strachauer surely included everything one could in the length of time he had for the reading of his paper. It seems to me that teamwork is absolutely essential. As we look back over our early cases of hypertrophic pyloric stenosis the deaths we had were due to what Dr. Christison has called our attention to, namely, that we gave different things to carry these patients along until they were not fit for surgery.

We have now a rather definite scheme for handling these cases and everybody is trained to do his part. In the first place, we arrange the operating table for the instruments; the surgeon sits at the left of the baby which lies on the arm table, which stands transversely to the operating table. The baby's feet are attached to the operating table. The anesthetist sits down at the head and takes hold of the arms close to the shoulders and by making traction straightens the child out, and thus the child lies perfectly flat and cannot get away.

I must differ with the reader of the paper in this respect, namely, I insist that there must be some good reason for giving general anesthesia to these children in this condition. No one can study these cases without being convinced that local anesthesia requires less time than does general, as one may give local anesthesia to one of these babies in thirty seconds and begin the operation in two minutes.

We make a transverse incision above the edge of the liver, so that we never see the intestines. The abdomen is opened without the child knowing it; a retractor is placed under the edge of the liver, and the liver forced up. You cannot palpate the pylorus before the abdomen is opened because the pylorus is directly back of the neck of the stomach. The stomach lies in front, but with the abdomen open one may reach directly back toward the spine and find the pylorus. A stitch is put through the upper edge of the incised pylorus and when the omentum appears the suture is carried through it and the wound is closed.

I have frequently made the statement that this operation is no more difficult of performance from the purely technical standpoint than is the operation of circumcision in a small child.

DR. H. B. SWEETSER, Minneapolis: I agree entirely with what Dr. Farr has said as regards the value of operating

under local anesthesia on these infants. I have given ether to an infant a few days old suffering from strangulated hernia, who almost succumbed; but when the ether was stopped, he promptly came back and the operation was completed without any further worry. On the other hand, I have seen an infant with pyloric obstruction die while the surgeon was waiting for ether relaxation. Unquestionably, there is danger from general ether anesthetic, although it is not great when given by an expert. But with local anesthesia one is independent of the anesthetizer, and is sure there will be no shock and that there will be perfect relaxation.

The preliminary treatment is very important. These infants are dehydrated, and fluid is very essential. Introduced into the peritoneal cavity it is quickly absorbed and the response is prompt. As for teamwork, the surgeon is really his own team, and can almost do the operation alone, or with only the nurses. If he is thinking right and working skilfully, the assistant does nothing practically but hold the retractor when necessary.

DR. S. AMBERG, Rochester: It is interesting to compare the discussion of this subject today with one I heard about two years ago in a pediatric society, as to whether operation should be performed immediately after the diagnosis of hypertrophic pyloric stenosis, or of pylorospasm. If operation is not performed at once it gives us a chance to treat these cases medically. It is true that in the vast majority of cases the Rammstedt operation is extremely simple, but I am sure Dr. Strachauer does not want to convey the impression that it is always a simple operation. I have seen children undergo operation at the hands of a skillful surgeon who had considerable difficulty in attempting to get at the pylorus on account of its not presenting properly on incision.

A case was observed recently at Rochester which illustrates the possibility of abnormal conditions very well. There was a history of projectile vomiting within the first week after birth. The child, now four years of age, was able to retain some food. At times peristaltic waves could be seen from left to right, and an obstruction was shown by the roentgen ray. At operation the intestines were found matted together, which caused obstruction of the duodenum at times.

So far as the technic is concerned, I may say that occasionally when these little patients are brought to us in a precarious condition we give transfusion before operation, with very good results.

DR. A. C. STRACHAUER, Minneapolis (closing): I want to thank the gentlemen for the interesting and profitable discussion of my paper.

General anesthesia for the surgery of infancy, when properly administered, is extremely satisfactory, and in my personal experience more so than local anesthesia. When I referred to a trained, skillful anesthetist and one familiar with the surgery of infancy I meant just what I said. If the anesthetic be intrusted to an inexperienced anesthetist, mishaps, and even fatalities, will probably occur. Of the 17 cases of hypertrophic pyloric stenosis which I here reported, there were no deaths attributable to the anesthetic, and general anesthesia was employed in the majority of the cases. In the entire series there was only one death, in the

case of an extremely emaciated, dehydrated infant in extremis. In a rather large experience in the surgery of infancy, including a series of cases of cerebral hemorrhage in the newborn, all operated within the first week following birth, in which large osteoplastic craniotomies were performed and subdural blood clots evacuated, general anesthesia was employed in each instance without a single fatality.

Most of the cases of hypertrophic pyloric stenosis which I reported were in extremely bad physical condition, many of them coming a considerable distance from the neighboring states, with body weight down to 4.5 pounds.

It is of interest to note that, of the seventeen cases, in only one instance was the patient a female.

In the preparation of dehydrated infants for other types of surgery we put normal salt solution into the peritoneal cavity, but prefer hypodermoclysis for the abdominal cases.

Regarding Dr. Christison's belief that the difference in the pathology of pyloric spasm and pyloric stenosis is slight, I wish to call your attention to the specimens passed around, which showed one hundred per cent increase in the thickness of the circular musculature in the cases of pyloric stenosis. Dr. Scammon, of our anatomical department and one of the leading authorities in the country on

the anatomy of the fetus, infant and child, states, after special investigation of the histology of the pylorus in these cases, that there is a definite and true hypertrophy of the circular musculature.

Dr. Farr stated that the Rammstedt operation is no more difficult of performance than a circumcision. He is, of course, speaking for himself, but I surely do not want this audience, particularly the younger men, to go away with this conception. Surgeons do not all possess the same degree of skill or ability, but speaking for myself I must say that I feel a great responsibility when operating upon these emaciated, dehydrated infants, weighing as little as 4.5 pounds. I have accidentally perforated the mucosa, which fortunately I was able to successfully close. These cases are hazardous risks, and my experience agrees with the Mayo Clinic, as stated by Dr. Amberg, to the effect that these cases may be extremely difficult.

Congenital hypertrophic pyloric stenosis is a real condition and requires the institution of prompt and appropriate treatment.

Dr. John Thomson, of Edinburgh, in a very interesting article, reports his experience with these cases at the Royal Hospital for Sick Children. Of 54 cases treated medically, 26, or 48 per cent, recovered; 28, or 52 per cent, died.

THE USE OF PARAVERTEBRAL NERVE BLOCK ANESTHESIA IN GENERAL SURGERY*

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Freedom from pain without disturbance of consciousness may be produced either by the action of

an anesthetic solution on the terminal filaments or end organs of sensory nerves, or by the action of a similar agent on any point of the nerve trunk in its course from the periphery, but still outside of the spinal canal. Thus, for example (Fig. 1) a benign tumor of the abdominal wall may be rendered insensible by locally injecting an anesthetic solution into the skin and underlying tissues at the

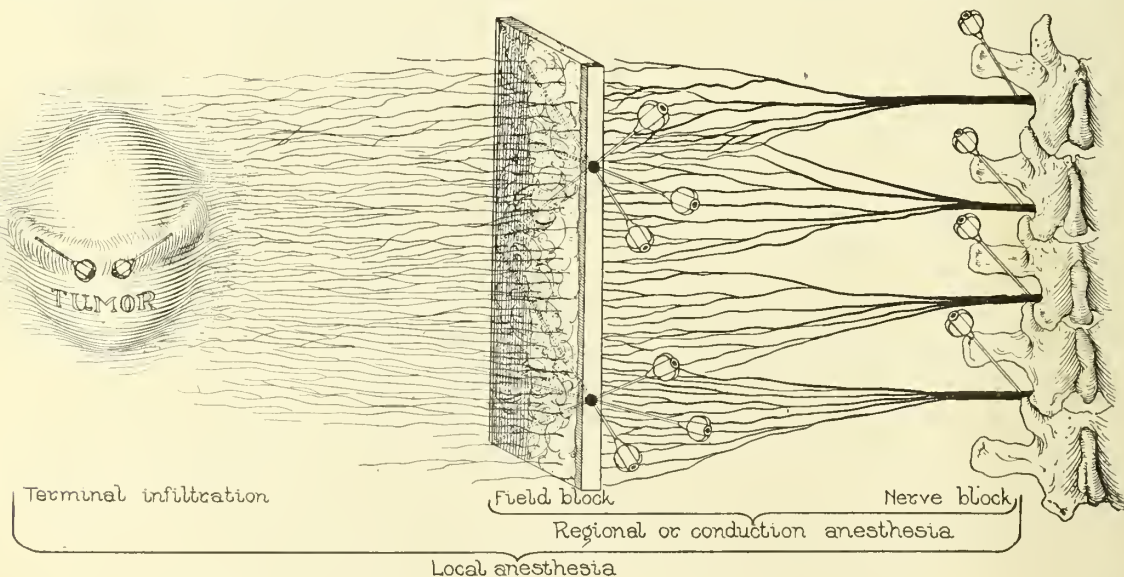


Fig. 1. Diagrammatic classification of local anesthetic procedures.

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site of the incision. This is infiltration anesthesia, terminal or peripheral infiltration, and was the first

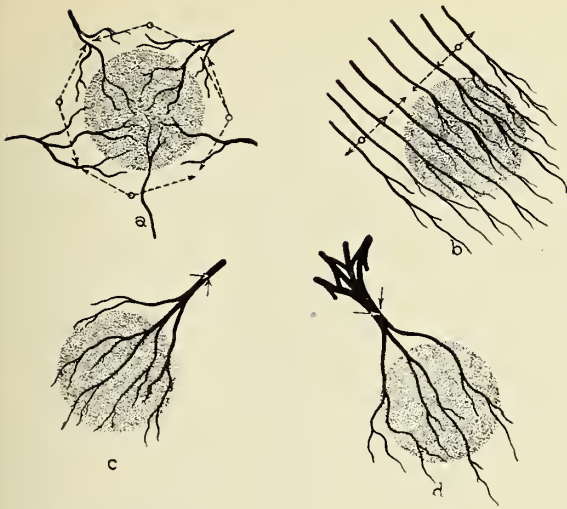


Fig. 2. Anesthetic procedures as related to the type of sensory innervation of the operative field. (a) divergent type of innervation. (b) parallel form of innervation. (c) convergent type. (d) isthmic types of nerve distribution. (Modified from Härtel.)

form of local anesthesia to be practiced. A somewhat larger area may also be anesthetized by surrounding the tumor with a wall of anesthetic fluid, if the tumor is located near the median line, or, if located farther to the side, by intersecting the nerve trunks proximally with a wall of anesthetic fluid on one side only. Such a procedure is known as field block.³² By this method no anesthetic fluid is injected into the operative field proper. The essential feature of technic here is the even distribution of anesthetic solution in the same plane, and in such a manner that a perfect wall of fluid has been projected, so that at no place in the wall may a nerve filament pass to the operative field unanesthetized.

Anesthesia may also be produced by the injection of the single large nerve trunks distributing to the operative field (Fig. 1). Spinal nerves may be injected at their points of emergence from the spinal canal at the intervertebral foramina, a procedure known as paravertebral nerve block, perispinal and segmental anesthesia. A wall of anesthetic solution is not employed here. By making use of the constant relationship of the large nerve trunks to bony prominences the needle may be advanced within such proximity to the nerve trunks that a single paraneural injection of sufficient amount will include the nerve trunk in the area of diffusion through the contiguous tissues.

In order successfully to practice local anesthesia it becomes necessary to know the main distribution, especially of the pain-conducting nerves throughout the body. With the extent of the operative field and

manner of operating determined, the choice of local anesthesia technic will depend on the course and distribution of the sensory nerves of the area. Infiltration of the operative field may be practiced in most areas of the body, but it is usually necessary for the surgeon to inject during the course of the operation unless the operative field is small and superficially located. Infiltration of septic fields, malignant tissues and areas of greatly lowered vitality should also not be practiced because of the possible spread of infection, or dissemination of malignant cells, and occasional interference with healing.

In many cases, if the anesthesia is to be completed before the operative work begins, field block or nerve block methods are best employed. The ease of accessibility of the larger nerve trunks and the type of sensory innervation of the operative field may be the deciding factors between these two procedures. The nerves of the field may all diverge toward different routes (Fig. 2, a) as in the scalp and median line of the upper chest and back. This may be termed the divergent type (Härtel) and is usually better adapted to circular field block. The nerves may leave the operating field more or less parallel to each other for a considerable distance (Fig. 2, b), preserving the metameric origin as in

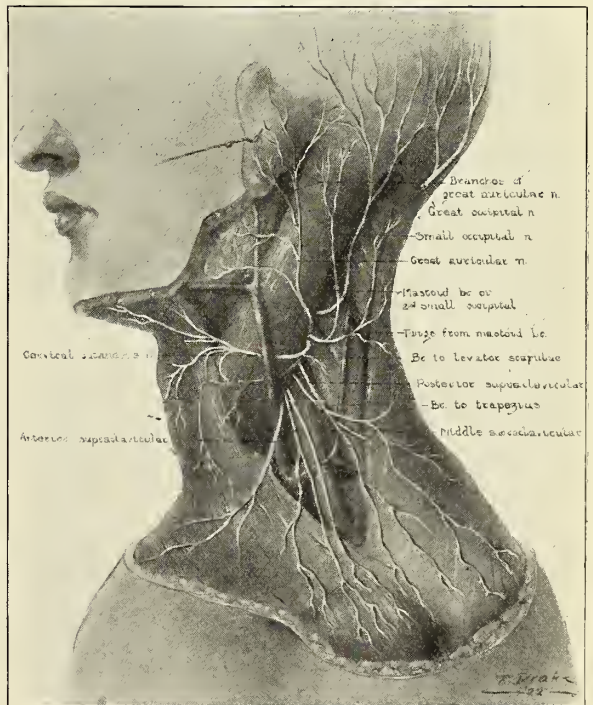


Fig. 3. Superficial branches of the left cervical plexus. (Modified from Spalteholz.)

the lower intercostals of the chest and abdomen. Field block may be induced in such an area by the projection of a wall of fluid on one side only intersecting the parallel course of the nerve trunks. All nerves from the field may converge to the same trunk, as in Figure 2, c, a good example of which is the trigeminus nerve. This convergent type is often more easily anesthetized by block of the single large trunk. Another type is seen in the distribution of the nerves of the larger plexuses of the body, particularly the brachial plexus. Here the nerves may leave the field more or less parallel and continue in this manner to converge and unite with each other at a certain point in their course and

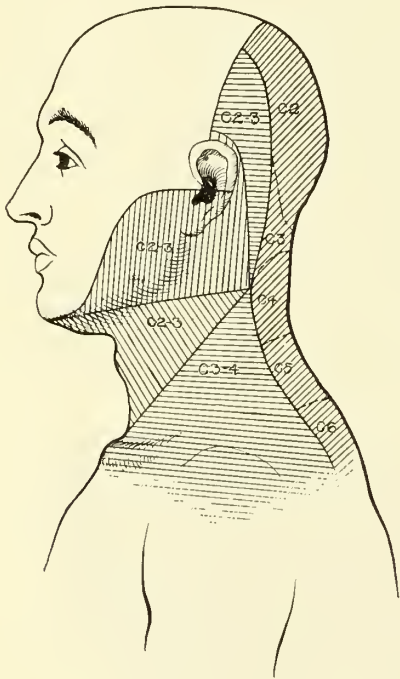


Fig. 4. Anesthesia resulting from paravertebral injection of the cervical plexus. (Modified from Cunningham.)

again diverge before entering the spinal canal, thus resembling the form of an isthmus (Fig. 2, d). This type of sensory innervation may also be well adapted to nerve block at some point along the isthmus.

Constant efforts to widen the scope of operations capable of being performed under local anesthesia have gradually evolved the newer method of paravertebral nerve block which has been applied to all spinal nerves. While this procedure was first practiced by Sellheim in 1905, only during the last decade has the method been exhaustively studied by such men as Braun,^{2, 3, 4} Finsterer,^{13, 14, 15, 16}

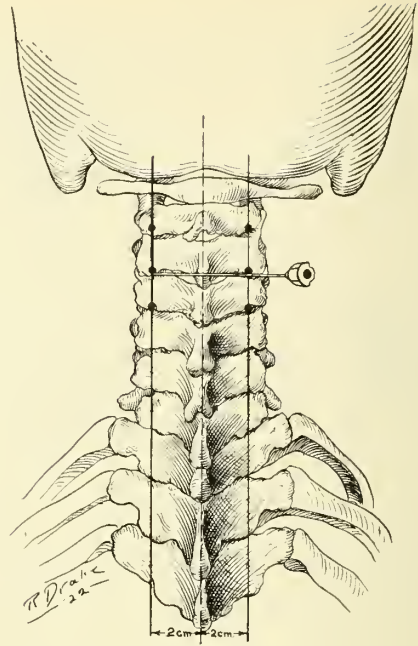


Fig. 5. Cervical plexus block, posterior route. (Modified from Pauchet.)

Läwen,^{33, 34, 35} Kappis,^{23, 24} Kronig,²⁸ Siegel,^{44, 45, 46} Pauchet,³⁹ Farr,^{8, 10, 11} Allen,¹ and others. As a result of this work its practical value and the possible extent to which it promises to replace other methods of anesthesia have been definitely determined. It is, therefore, with a consideration of the limitations in technic and actual value of paravertebral nerve block as applied to all spinal nerves that this paper is chiefly concerned.



Fig. 6. Cross section through the neck at the level of the fourth cervical vertebra, showing position of needles in posterior and lateral direct methods. (Modified from Eyclesheimer.)

CERVICAL PLEXUS BLOCK

There are three avenues of approach to the cervical plexus, the posterior route, the lateral direct route, and the lateral oblique route.

The posterior route (Danis) is similar to thoracic paravertebral nerve block. Dermal wheals are raised opposite the second, third, and fourth cervical spinous processes and 2 cm. from the middle line (Fig. 5). A needle is then advanced in a direction parallel to the median longitudinal plane of the body until its point impinges on the lateral masses of the vertebrae. It is then withdrawn and reinserted a little more obliquely outward. The needle may then be felt to pass the lateral masses, after which it is advanced at least a centimeter deeper. At this point an injection of 5 to 8 c.c. of 1 per cent procaine-epinephrin solution is injected while the needle is moved somewhat to and fro. Three similar injections on each side are made in this manner (Fig. 5).

By the lateral direct method (Heidenhain-Braun) the needle is introduced from the side directly on the transverse processes in a plane parallel to the

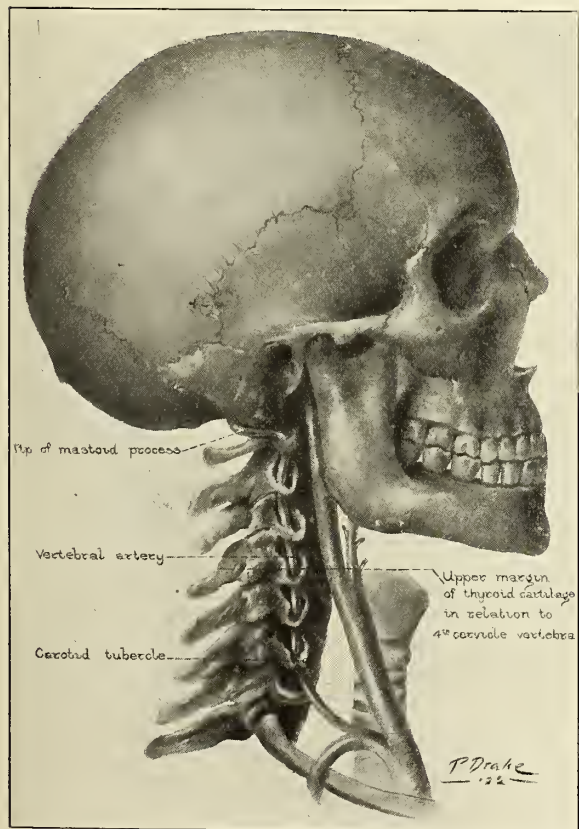


Fig. 7. Lateral view of cervical vertebrae, showing the relation of transverse processes to the tip of the mastoid and carotid tubercle. (Modified from Campbell.)

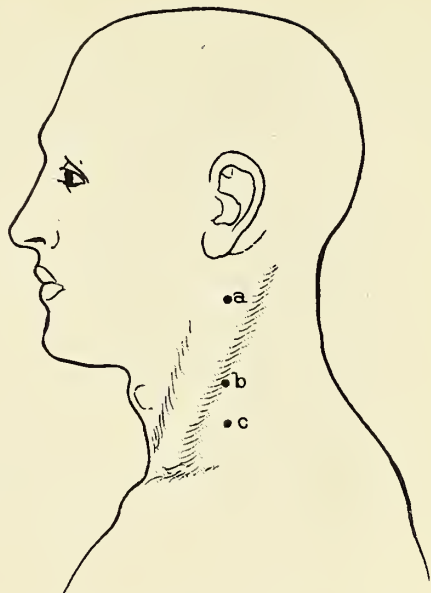


Fig. 8. Cervical plexus block, lateral direct method. (Modified from Pauchet.)

cervical column (Fig. 6). With the patient lying on his back, and head tilted to the opposite side, the tip of the mastoid process and carotid tubercle (Chassaignac) are palpated. A line connecting these two points lies over the cervical transverse processes (Fig. 7). The carotid tubercle may not be palpable, in which case the row of transverse processes may usually be recognized by rolling the tissues around and exerting gentle pressure at the same time. A dermal wheal (Fig. 8, a) is raised at a finger's breadth below the mastoid process, which is ordinarily on a level with the angle of the jaw. Another wheal (Fig. 8, b) is located on the imaginary line connecting mastoid process and carotid tubercle and on a level with the superior cornu of the thyroid cartilage. Through these two wheals needles are advanced until contact is taken with transverse processes where 5 to 8 c.c. of 1 per cent solution is injected. The transverse processes of the third, fourth and fifth cervical vertebrae are usually located through wheal b, and the second through wheal a. Besides the blocking of both sides in this manner, additional solution is distributed subfacially and subcutaneously in the same plane. The quantity of solution injected should rarely exceed 25 c.c. for the deep injections and 15 c.c. for the superficial infiltration on each side, making a total of 80 c.c. of 1 per cent solution.

In the lateral oblique method (author's technique), the transverse processes are also approached through the lateral plane, but from above obliquely

downward. With the patient in the thyroidectomy position and with the head rotated somewhat away from the operator (Fig. 9) the same landmarks are identified as in the lateral direct method. A dermal wheal (Fig. 10, a) is then placed just below, and almost contiguous to, the tip of the mastoid process. Wheals (Fig. 10, b and c) are then raised at distances of 1 cm. below and in line with the carotid tubercle. The needle is then inserted at the highest wheal and advanced obliquely downward at an angle of 45 degrees with the median plane of the body, while the line of transverse processes is palpated with the left hand. When bony contact is sensed, an injection of 5 to 8 c.c. of procain-epinephrin solution is made, the needle being slowly withdrawn as the injection is concluded. Similar

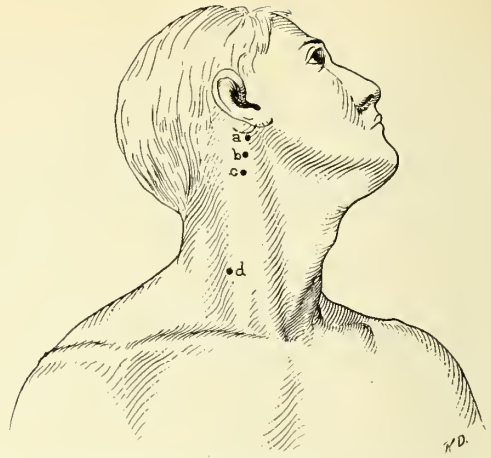


Fig. 10. Cervical plexus block, lateral oblique method. (a) mastoid wheal. (b) and (c) being located distances of 1 cm. below. (d) marks the carotid tubercle.

by this method of penetrating the intertransverse space and wounding the vertebral artery, or of puncturing the dura, the jugular vein or carotid artery might be injured by advancing the needle too far. The depth to which the needle must be advanced after bony contact with the lateral masses will also vary in different cases, so that a considerable portion of the solution is distributed at too great a distance from the nerve trunks and none of the solution by this method is deposited as close to the tips of



Fig. 9. Position of patient and operator in cervical plexus block by the lateral oblique method.

injections are made at the tips of the third and fourth cervical transverse processes from wheals *b* and *c*, respectively. Subfascial fanwise injections are then made in the same plane, so that at completion a wall of anesthetic fluid extending from skin to transverse processes has been projected. The total amount of solution in this procedure is about 70 to 80 c.c., as in the lateral direct method.

Comparing the merits of the three methods, the posterior route is anatomically less accurate than the lateral routes. Landmarks are more difficult to recognize and a favorable position for the operator is tiresome to the patient. While there is no danger

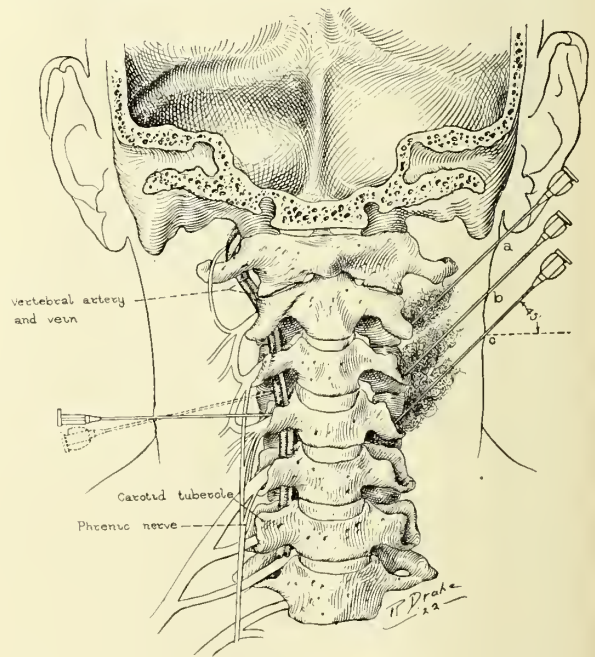


Fig. 11. Lateral methods of cervical plexus block. By the direct method, on patient's right, the danger of entering interspaces and injuring the vertebral vessels or cord is shown. By the oblique method, patient's left, there is no danger of such an accident. (Stippled areas on the left represent injected anesthetic fluid.)

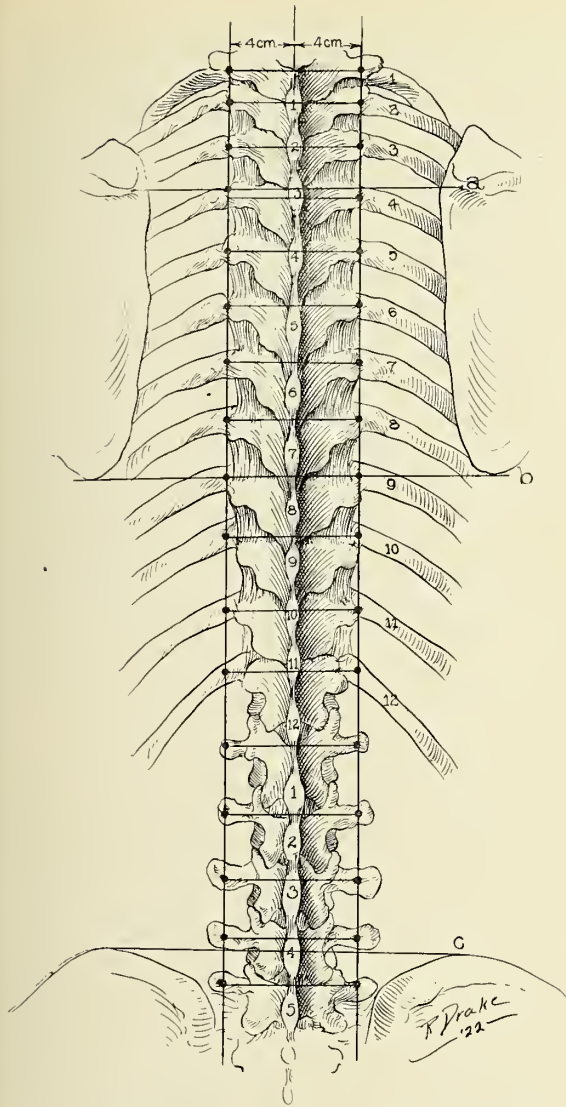


Fig. 12. Posterior view of thoracic and lumbar skeleton, showing relation of points of puncture to spinous processes at the different levels. (a) interspinous line of scapulae in relation to the third thoracic spine. (b) line connecting inferior angles of scapulae in relation to seventh thoracic spine. (c) interiliac line marking the position of the fourth lumbar spine.

the transverse processes as when the lateral methods are employed, factors which account for a more efficient anesthesia by the latter procedures.

Of the two lateral methods, the oblique is to be preferred to the direct. An inspection of Fig. 17 will show that the tips of the transverse processes are thin, rather sharp-edged, and that they slope downward at their terminations, offering rather poor surfaces of contact for the needle in the lateral direct technic. The needle may enter the intertransverse space (Fig. 11), injuring the vertebral artery or vein, or puncturing the dura,⁵² before bony contact has been felt, especially when the needle is ad-

vanced in an upward direction. When the needle is advanced obliquely downward, however, these accidents cannot occur, as the needle never enters the intertransverse space far enough to reach the vertebral vessels (Fig. 11).

Bilateral cervical plexus block by the lateral oblique method has been repeatedly employed in thyroidectomy, resection of cervical and submaxillary glands, excision of branchial cysts and cervical laminectomy. It has been useful in laryngectomy, together with block of the superior and inferior laryngeal nerves, and deep infiltration of the submaxillary region. Unilateral block has been efficient in the operations on esophageal diverticula and in osteoplastic flaps in brain surgery. There have been no injuries to the vertebral vessels or cord and no functional disturbances of the vagus or phrenic nerves.

THORACIC PARAVERTEBRAL NERVE BLOCK

Numerous procedures have been proposed for blocking the thoracic nerves at their exits from the intervertebral foramina, all of which attempt to block these nerves close to the spine. It is at this point that the nerve lies at equal distances from the transverse processes and that the communicating sympathetic branches are given off to the sympathetic ganglia. The nerve at this point lies about 2 cm. in front of the intertransverse space in the average adult. Points, 3.5 to 4 cm. from the median line and directly over the tips of the transverse processes, costo-vertebral articulations or angles of the ribs, are selected for the initial insertion of the needle, and marked by dermal wheals.

In the selection of these points the spinous processes are the only reliable landmarks, the ribs not being palpable. The relation of spinous proc-

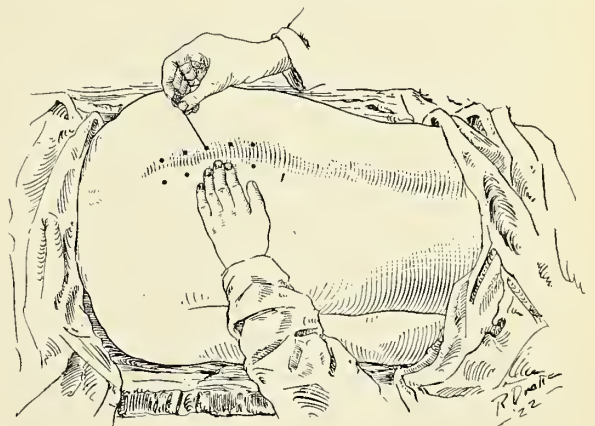


Fig. 13. Position of patient in bilateral thoracic paravertebral nerve block.

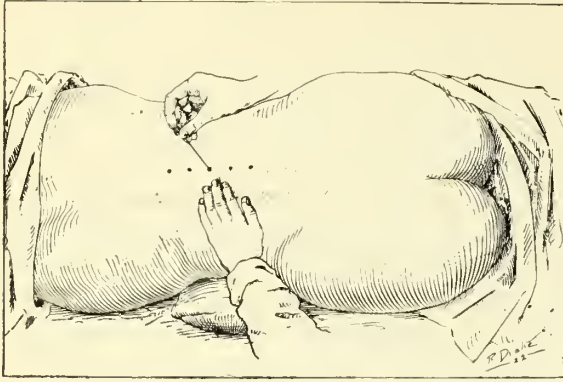


Fig. 14. Position of patient in unilateral paravertebral nerve block for nephrectomy.

esses to these points of insertion is shown in Fig. 12 by the transverse lines connecting each pair of corresponding points. It will be observed that the spine of the first thoracic vertebra lies even with the points of insertion over the angles of the second pair of ribs. From above downward this relation is almost the same for the second, third, and fourth spinous processes, and for the rib below, although spinous processes are longer and slant farther downward until the fifth, sixth, seventh, and eighth processes mark the levels of interspaces. The original relation then tends to become re-established until the eleventh spine again marks the angle of the twelfth rib. The third thoracic spine may be recognized by a line connecting the spines of the scapulas, while the line connecting the inferior angles of the scapulas usually touches the seventh thoracic spine.

For bilateral injections the patient is placed in the ventral decubitus position with a cushion under the chest, and head low, as for a laminectomy (Fig. 13). For unilateral injections the patient lies on the side opposite the one to be injected, with the back arched and hips flexed and with a pad under the loin (Fig. 14). These positions tend to accentuate bony prominences and widen the intercostal spaces. A point 4 cm. from the median line and directly over the costo-vertebral articulation as determined by the diagram in Fig. 12 is then marked by an intradermal wheal. A needle 8 to 10 cm. long is introduced to a depth of 4 or 5 cm., when bony contact is felt, at which position the needle touches either the rib, transverse process or costo-vertebral articulation. The needle is then withdrawn until its tip is just within the subcutaneous tissues and its direction changed so that it will pass medially and downward, the inclination varying from 25 to 45 degrees outward and upward (Fig. 15). The needle

is thus advanced downward and inward across the intertransverse space and into the intercostal space about 2 cm. deeper than in the first position, when the point of the needle should lie close to the intervertebral foramen and between the external intercostal muscle and the internal intercostal fascia (Fig. 16). After aspirating to determine that no blood comes from the needle, an injection of from 5 to 8 c.c. of 1 per cent procain-epinephrin solution or from 10 to 15 c.c. of 0.5 per cent solution is made while the needle is moved somewhat to and fro in order to be sure that the nerve trunk is well bathed and to include the sympathetic communicating branch as well as the posterior branch (Fig. 15). This procedure is continued for the desired number of segments, then the corresponding nerves of the opposite side are injected in a similar manner.

For paravertebral lumbar block essentially the same procedure is followed, although in this region anatomic conditions are somewhat different. The larger size of the vertebrae and absence of ribs makes larger interspaces as compared with the thoracic region (Fig. 17). The nerve trunks are larger and

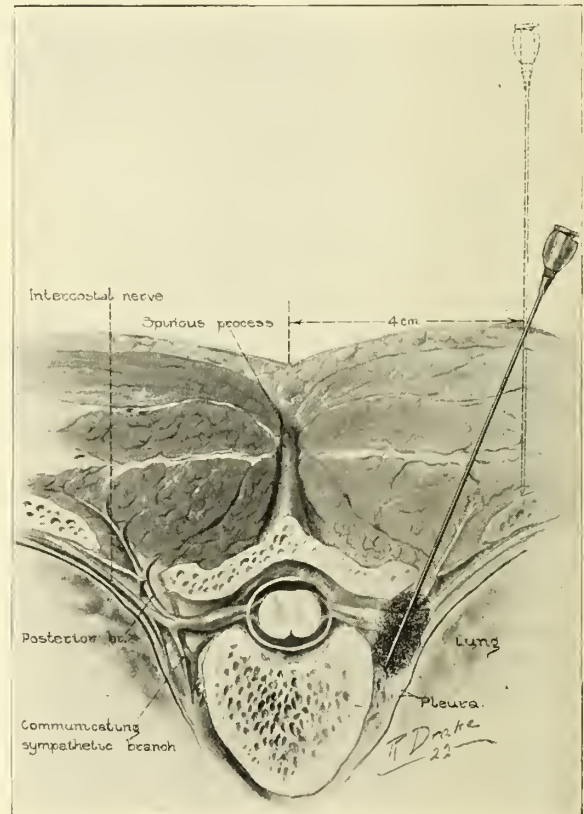


Fig. 15. Thoracic paravertebral nerve block. Cross section through the mid-thoracic region, showing needle in correct position for injection. Dark area represents injected anesthetic fluid. (Modified from Spalteholz.)

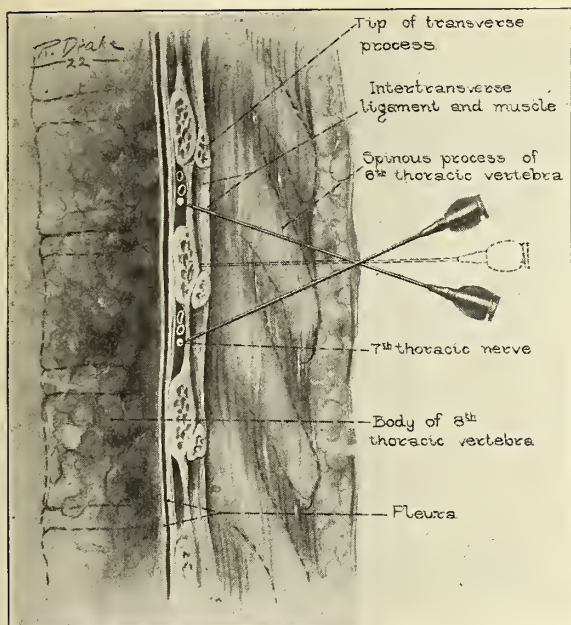


Fig. 16. Thoracic paravertebral nerve block. Sagittal section showing needle in correct position for injection in sixth and seventh interspaces.

lie directly anterior to the intertransverse muscles and fascia. The muscles of the loin are thicker, giving a greater depth to the nerve trunks. The tips of the transverse processes are marked by dermal wheals, also 3.5 to 4 cm. from the median line, and their position determined from the spinous processes as in the thoracic region. The lower margin of the spine of the twelfth thoracic vertebra marks the transverse processes of the first lumbar vertebra. Progressing downward, the spines assume a higher position with regard to transverse processes of the vertebra below, until the fourth spine exactly marks the interspace. A line connecting the highest points of the iliac crests usually crosses the fourth lumbar spine.

The needle, usually 8 to 10 cm. long, is inserted through a dermal wheal and advanced directly downward until it strikes the transverse process. It is withdrawn and the hub inclined 20 to 30 degrees outward and downward. It is then advanced medially and upward passing the transverse process and continuing 1.5 to 2.5 cm. further where 8 to 10 c.c. of 1 per cent or 10 to 15 c.c. of 0.5 per cent procain-adrenalin solution is injected while the needle is moved somewhat to and fro. This procedure applies to all lumbar nerves except the fifth, in which case the needle passes below the fifth transverse process. When 0.5 per cent solution is used, injections may be made both above and below the

transverse processes, using only one-half the amount of solution, as when the needle passes on one side only.

Thoracic paravertebral anesthesia has been found most useful in laminectomy.⁴⁹ The same anesthesia may also be used in the Hibbs operation. Here 0.5 per cent solution may be employed and injections made both above and below each rib. It is not necessary to anesthetize intercostal nerves as the anterior divisions take no part in the innervation of the operative field. Thoraco-plastic work may also be performed by this method, although intercostal anesthesia and local infiltration are satisfactory for most thoracic operations. Unilateral thoracic paravertebral, combined with brachial plexus block, also has a limited use in radical removal of the breast. Block of the ninth thoracic to third lumbar nerves is valuable in nephrectomy, although there is often intolerable pain when the kidney is delivered, necessitating additional injections or a short general narcosis.^{9, 48} Bilateral paravertebral of the third, fourth, and fifth lumbar nerves is sometimes added to transsacral nerve block in resections of cancers situated high in the rectum or rectosigmoid.³¹

It was originally hoped that in bilateral paraver-

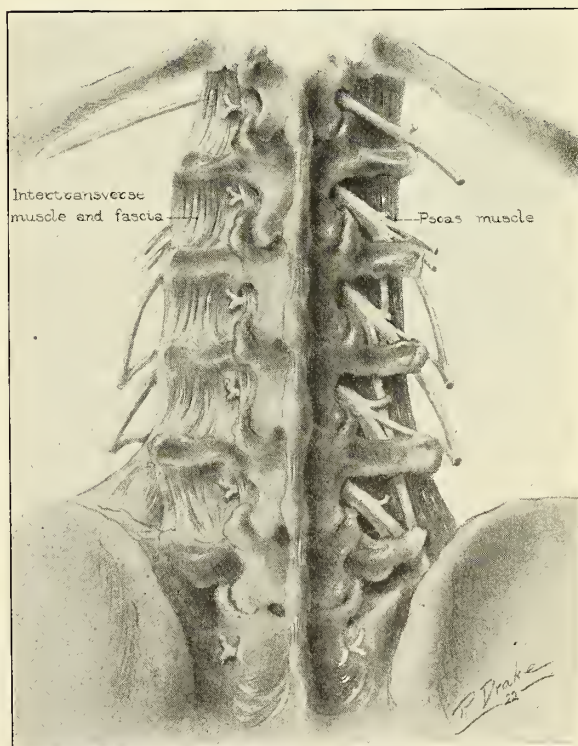


Fig. 17. Anatomic relations of lumbar vertebrae and nerves. (Modified from Pauchet.)

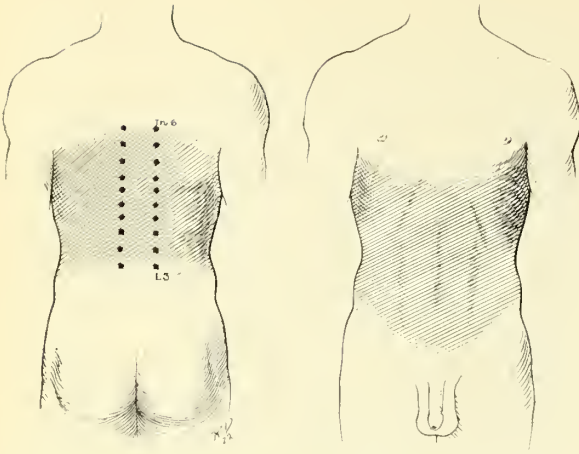


Fig. 18. Bilateral paravertebral anesthesia for abdominal surgery, after Kronig and Siegel.

tebral nerve block a practical method of anesthesia for abdominal surgery had been evolved (Fig. 18). The work of Braun and Finsterer on this problem has been particularly thorough and comprehensive. After a complete trial these men have entirely abandoned the method for abdominal operations.^{4, 20} The disadvantages seem to preponderate greatly over the advantages, and hence its adoption is not to be recommended. As is evident from the description the technic is highly complicated, time-consuming, and tedious, which is not in itself a disadvantage, were it not for the fact that anesthesia

is so often incomplete and never of the type of "abdominal silence" as in ether narcosis or spinal anesthesia.¹⁷ For this reason the very few surgeons who still occasionally employ this method must of necessity induce deep preliminary morphin-scopolamin narcosis and often smooth over an insufficient nerve block anesthesia by local infiltration and "a few whiffs" of ether or nitrous-oxid-oxygen analgesia. The deep and by no means painless injections have to be made from several points of puncture. Often repeated search in the same interspace must be made, even in the hands of the most expert, making the procedure an extensive surgical operation in itself. The demands made on the psyche of the patient are comparatively severe, making the term

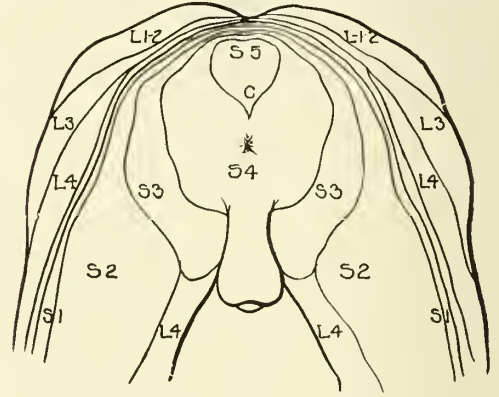


Fig. 20. Sensory distribution of sacral nerves.

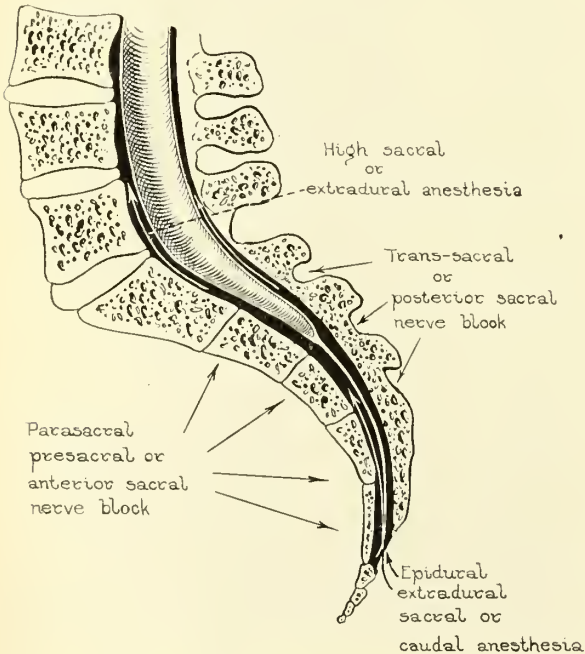


Fig. 19. Diagram illustrating different methods of approach in blocking sacral nerves.

"shockless surgery"²⁶ rather a misnomer.⁵⁰ The injections are not free from risk.^{7, 18, 39} Toxic symptoms are often manifested because of the large amount of solution employed,^{38, 51} which should serve as a warning note. In the experience in the Mayo Clinic bilateral paravertebral nerve block in abdominal surgery has been unsatisfactory and the contention that it is indicated in all abdominal surgery seems to be the result of rabid enthusiasm.

The performance of any extensive abdominal operation under local anesthesia is beset with difficulties in most cases. Such operations are best limited to those parts which are either in contact with the abdominal walls, or are readily accessible without undue manipulation or traction. When the diagnosis is obscure, when complete exploration is necessary, and in the presence of acute inflammation or extensive adhesions, local anesthesia should be attempted only in the presence of contraindications to general narcosis. The simpler operations, such as gastrostomy, gastrotomy, colostomy, gall-bladder drainage, and appendectomy, may be satisfactorily

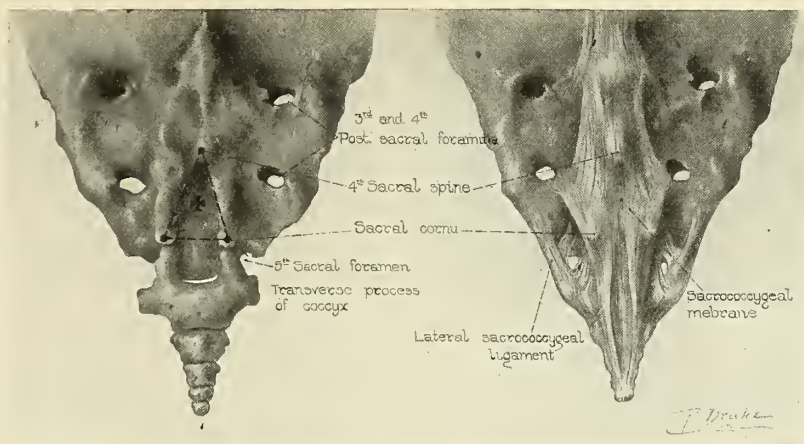


Fig. 21. Bony landmarks of the sacral hiatus.

performed under local infiltration when the patient is not too nervous and apprehensive, when the parts are easily accessible, and not matted down by inflammation or adhesions. As a rule all stout and obese patients, those with tense, rigid abdominal walls, a high costal margin, and acute costal angle are difficult to handle in any serious abdominal operation. On the other hand, in thin subjects with relaxed abdominal walls, flat chest anteroposteriorly with wide costal angle, long mesenteries, and of a co-operative mental attitude, operations of considerable magnitude have been very satisfactorily performed in poor surgical risks under local infiltration alone. The problem of anesthesia for abdominal operations in cases of poor surgical risks seems to be better solved by local infiltration or abdominal wall field block for the laparotomy, supplemented by a short first-stage ether or nitrous-oxid-oxygen anesthesia if needed for the intra-abdominal work.

SACRAL NERVE BLOCK

Block of the sacral nerves may be accomplished by the injection of an anesthetic solution (1) into the sacral canal, called epidural, sacral, extradural, or caudal anesthesia; (2) by paraneural injection of the nerve trunks at their exits from the anterior sacral foramina, called parasacral, presacral, and anterior sacral nerve block, and (3) by paraneural injections into the posterior sacral foramina, called posterior sacral or transsacral nerve block (Fig 19).

Läwen first succeeded in developing a method of sacral anesthesia dependable for operative work.^{33, 35} He increased the anesthetic and penetrating power of a 2 per cent novocain adrenal solution by the addition of sodium bicarbonate.

This injection is made with the patient lying on his abdomen, with a cushion under the hips, which elevates the buttocks and accentuates bony prominences. The index finger of the left hand then follows the posterior surface of the coccyx upward until the sacral cornua are felt on either side. Somewhat higher the fourth sacral spine (Fig. 21) may be palpated, marking the apex of the isosceles triangle, guarding the entrance to the sacral canal. A dermal wheal is placed within this triangle and subcutaneous tissues and sacrococcygeal membrane infiltrated. A fine spinal puncture needle is intro-

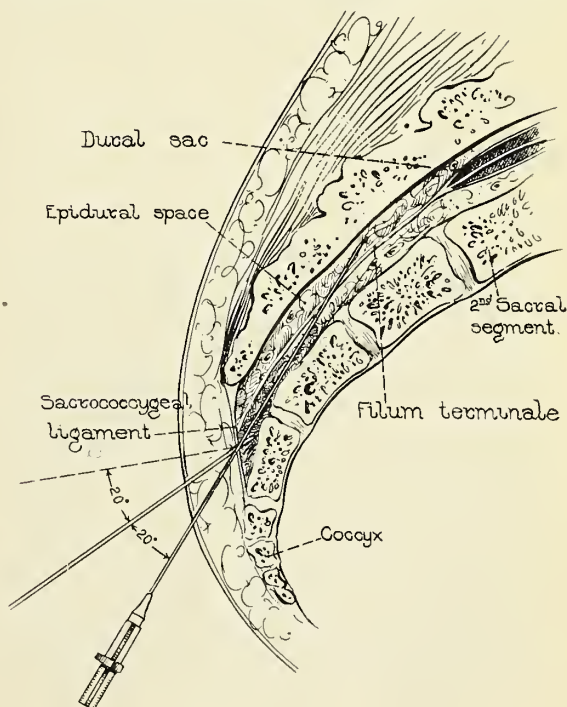


Fig. 22. Longitudinal section of lower sacrum and surrounding tissues showing technic of an epidural injection.



Fig. 23. Presacral nerve block, showing method of approach to the anterior sacral foramina.

duced through the skin with bevel upward and at an angle of about 20 to 30 degrees. The needle will be felt to pierce a dense membrane, then strike the bone of the anterior wall. It is withdrawn 1 to 2 mm., depressed 20 to 30 degrees farther until approximately parallel to the sacral canal, then advanced upward 3 or 4 cm. (Fig. 22). If blood or spinal fluid escapes on removing the stylet or on aspiration, the needle should be slightly withdrawn, or its position changed until these cease to flow. The injection of the solution is then made very slowly and gently, the needle being gradually withdrawn until at the completion of the injection the needle is just inside the sacrococcygeal membrane.

The method of blocking the sacral nerves at their points of emergence from the anterior sacral foramina is usually accredited to Braun. With the patient in the lithotomy position, two points of injection 1.5 to 2 cm. from the median line at the sacrococcygeal articulation are selected and dermal wheals raised. A longer needle is then introduced and the way is felt past the edge of the sacrum and along the anterior surface of the bone, parallel to the median line, to the height of the second sacral foramen (Fig. 23). The entire distance is injected with 20 c.c. of 1 per cent solution. The needle is then withdrawn and directed at an angle more anteriorly toward the line of the innominate bone. It is advanced much deeper than before until it strikes the promontory of the sacrum close to the first sacral foramen, where 20 c.c. of solution are injected. The procedure is repeated on the opposite side, after which a final injection of 5 c.c. is made between the coccyx and rectum, 100 c.c. in all being

used. More recently 0.5 per cent solution has given better results, 100 c.c. usually being injected on each side. Braun makes the injections without the aid of a guiding finger in the rectum, but other operators usually determine the position of the needle in this manner.

In transsacral nerve block the paraneural injections are made through the posterior sacral foramina.³⁷ These foramina lie in the same straight line and are very nearly equidistant from each other, the distance decreasing from above downward (Fig. 24). A dermal wheal placed just laterally and below the sacral cornu locates the sacral notch on the lower margin of the sacrum in which the fifth sacral nerve lies. Palpating the most prominent point of the posterior superior iliac spine with the left hand, another dermal wheal is placed 2.5 cm. medial and about 0.5 cm. downward, which marks the position of the second sacral foramen (Fig. 26). The space between this wheal and the first is divided into three equal parts by two more wheals. A fifth is then placed the same distance above the second and in the same straight line, which indicates the location of the first sacral foramen.

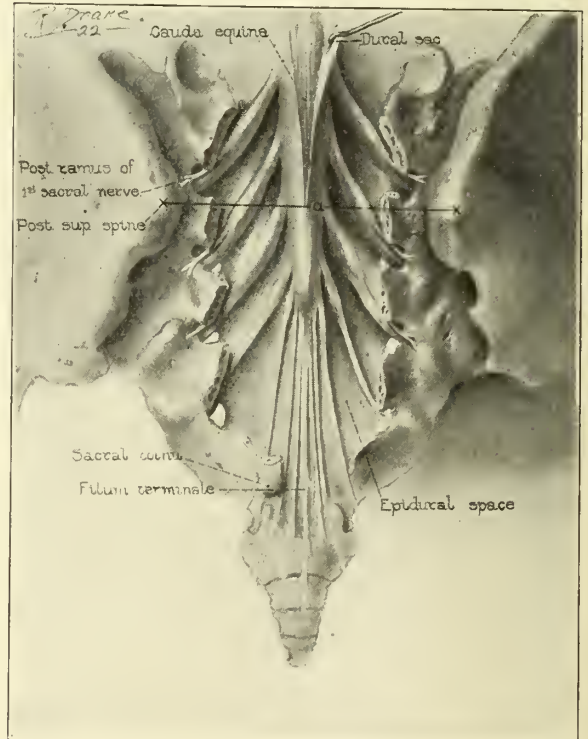


Fig. 24. Sacral portion of spinal meninges and sacral nerves in the epidural space. Sacral laminae have been removed. (a) interspinous line of ilium lying between first and second sacral foramina. (After Spalteholz.)

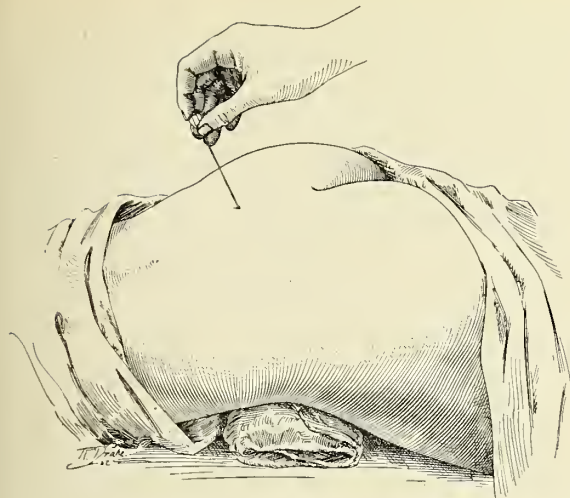


Fig. 25. Position of patient in transsacral nerve block.

Search for the foramina is then made by advancing the needle directly downward and somewhat inward in a direction thought to be perpendicular to the tangent of the sacrum at that point. It usually comes in contact with bone during the first few attempts, the distance from the skin to the posterior surface of the sacrum being estimated in this way. When, after repeated search, the needle seems to perforate a membrane, advance farther than before and still not encounter bony resistance, it has passed into the foramen. Greater inclination of the needle to the skin surface is necessary in searching for the highest foramina, due to the downward curvature of the sacrum and greater thickness of overlying soft tissues (Fig. 27). The size of foramina and nerve trunks also decreases from above, downward, necessitating the injection of larger amounts of solution in the higher foramina (Fig. 28). The quantity for each successive foramen is thus usually reduced by 1 c.c., that is, 7, 6, 5, 4, and 3 c.c. for the first to the fifth foramina respectively. From 50 to 70 c.c. of 1 per cent solution is sufficient for complete transsacral block.

The choice of procedure in operations in which the sacral nerves supply the region is transsacral nerve block for the deeper and more extensive operations and sacral injections in the more superficial. By the sacral method, operative anesthesia does not result in 10 to 15 per cent of cases, and when successful, the height of anesthesia varies. A twenty-to thirty-minute delay for the onset of anesthesia is also necessary, and the appearance of occasional toxic symptoms is a drawback. Its chief use at present is in minor surgery of the terminal rectum and perineum and in urologic manipulations.⁴¹

Parasacral anesthesia is tedious and difficult to attain, and complete anesthesia does not result as often as with the transsacral method. The passage of needles through the perineum is also accompanied by danger of perforating the rectum. Infection may also be spread by the needle punctures when a septic arc is traversed and the possible dissemination of cancer cells from secondarily involved perirectal lymph glands in cancer of the rectum must be kept in mind.

The combination of a very low sacral injection with transsacral block of the upper four sacral nerves has given uniformly satisfactory results. By this method the entire pelvic floor and viscera are anesthetized. Resections of the carcinomatous rectum, amputations of the prolapsed rectum and plastic operations on the rectal sphincters, have been performed many times. Perineorrhaphies, trachelorrhaphies, and the complete extirpation of the carcinomatous urethra are easily performed under this method of anesthesia, and with the addition of an abdominal wall field block for the suprapubic incision, resections of the bladder and prostatectomy have been repeatedly performed.

From this rather limited consideration of paravertebral nerve block it must be concluded that the value of the method varies greatly in different locations along the vertebral column. The original idea of creating anesthetized segments corresponding to embryonic somites, often termed segmental or cross-sectional anesthesia, has not been realized, with regard to the thoracic and abdominal cavities and viscera. Kronig⁶ and Siegel still employ the method, having used it in a large number of abdominal

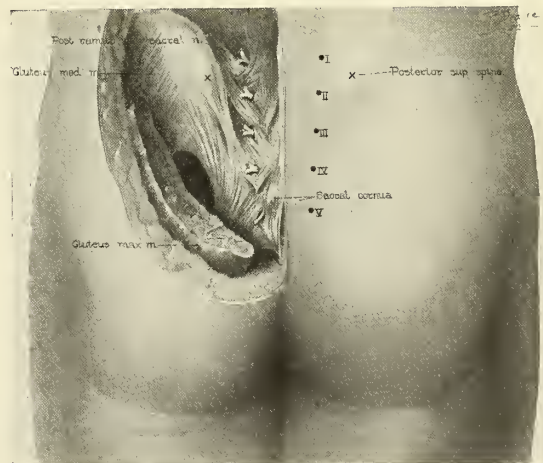


Fig. 26. Regional anatomy of sacral nerves and foramina. Cutaneous landmarks on right marking foramina. Note relation to posterior superior spine and sacral cornu. (Modified from Pauchet.)

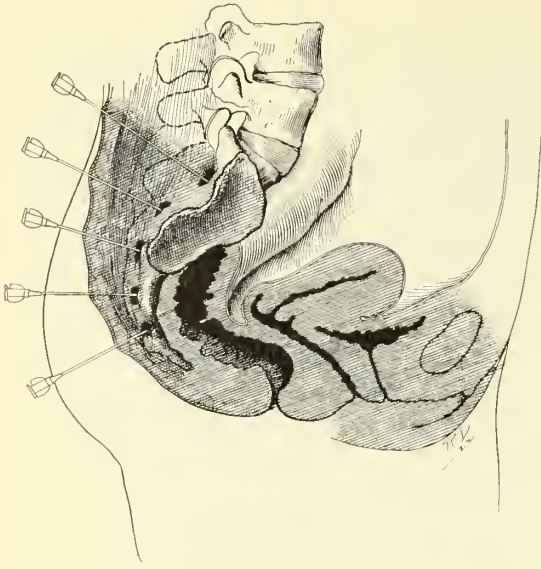


Fig. 27. Median longitudinal section through female pelvis and viscera with the entire sacrum preserved. Note the variable thickness of tissues overlying the sacrum and correct direction of needles in entering the different sacral foramina. (Modified from Pauchet.)

cases. Jones²² of Seattle reported a small series of abdominal cases by this method in 1916. In 1917, Konrad of Kronig and Siegel's Clinic in Freiburg attempted to introduce the method in the Boston City Hospital.²⁷ More recently, Labat²⁹ has attempted to revive the method. Considering the deep preliminary narcosis these men employ, and the many other features mentioned, influencing the success of local anesthesia in abdominal surgery, it is questionable whether in all of the cases cited by these men, the operations could not have been more safely and easily performed under local infiltration alone,⁴⁷ or with the addition of a small amount of ether or nitrous-oxid-oxygen as needed. The present tendency of surgeons of widest experience in local anesthesia is to abandon bilateral paravertebral nerve block for abdominal surgery.¹² More recent investigations have been to interrupt conductivity in the splanchnic^{5, 25, 30} nerves. This form of block anesthesia is still in its initial stages and it is not as yet possible to foretell whether there is likely to be any future in it as a practical method.

CONCLUSIONS

1. The local anesthesia technic for a given operation should be planned with due consideration of the regional anatomy, nerve supply, and the extent and technic of the operative work.

2. Paravertebral nerve block at all levels of the spine is difficult to produce, distressing and painful to most patients when preliminary narcosis is not

employed, and usually requires a delay of about fifteen minutes before anesthesia is complete.

3. The practical value of paravertebral nerve block is not the same at all levels of the spine. It is least satisfactory in abdominal surgery, where its use is never indicated. Compared with the present very efficient methods of local infiltration and general narcosis, paravertebral anesthesia for abdominal surgery in the experience of the Clinic has been an unsurgical procedure even in the hands of experts.

4. In sacral nerve block, the choice of procedure is the combination of a low epidural injection with transsacral block of the first, second, third, and fourth sacral nerves. This method is uniformly satisfactory in surgery of the pelvic floor and viscera.

5. Cervical plexus block by the lateral oblique method gives satisfactory anesthesia in surgery of the neck, although it must be admitted that this region is also well adapted to local infiltration.

6. Thoracic paravertebral anesthesia is useful in laminectomy, the Hibbs operation, and thoracic operations. Lumbar paravertebral anesthesia is also valuable in laminectomy and in resections of the rectum. In nephrectomy, block of the ninth thoracic to third lumbar nerves is a practical procedure.

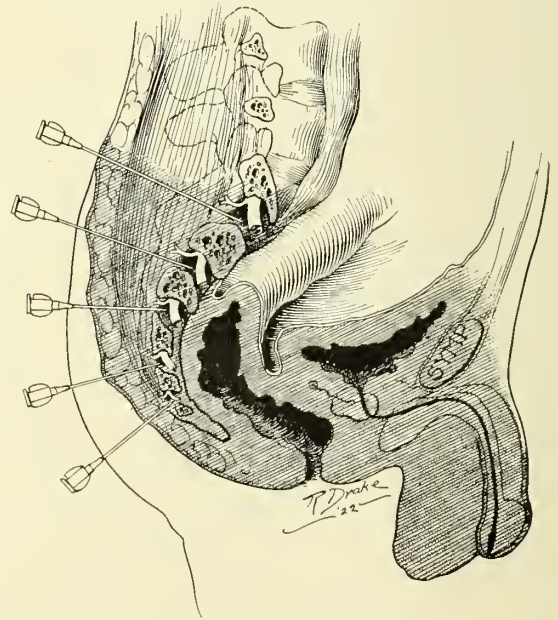


Fig. 28. Median longitudinal section of pelvis anterior to sacrum and oblique longitudinal section through right sacral foramina. Note progressively decreasing length and diameter of the foramina from above downward and the decreasing sizes of nerve trunks. (Modified from Pauchet.)

7. While indifference on the part of surgeons should not too greatly limit the field to which local anesthesia is entitled when properly handled, neither should enthusiasm too greatly extend it. The problem of local anesthesia is not that of dealing a mortal blow to general narcosis in the entire field of surgery, but of being used jointly with general narcosis each in its proper sphere, always for the best interests of the patient. A biased exclusiveness toward one method or the other is to be guarded against, since the special indications must determine the choice of anesthesia in all cases.

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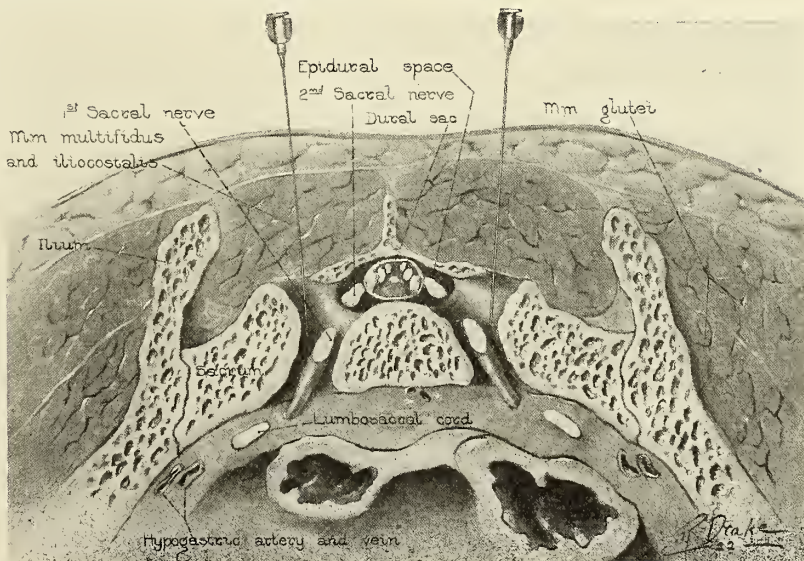


Fig. 29. Oblique cross section through the first sacral foramina showing proper position of needles for injection into foramina.

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DISCUSSION

DR. S. R. MAXEINER, *Minneapolis*: I wish to compliment Dr. Meeker on his excellent paper, and I enjoyed very much hearing his talk on regional anesthesia. I have been particularly interested in this field of anesthesia probably most because since about 1910 I have been associated with Dr. Farr.

In 1911 we did some experimental work at the University on the cadaver. We worked up a large number of these paravertebral blocks, particularly with reference to the cervical, thoracic, lumbar and sacral regions. We also made blocks of the trigeminus by its various routes. We found that this was a difficult field and required a large amount of experience and carried with it a considerable number of failures. With this experience applied to the living subject, we began a large number of nerve block anesthetics and started the routine use of local anesthesia. At first, we had a considerable number of cases that had to be supplemented by general anesthesia, but this number became smaller and smaller until at the present time the number of cases supplemented by general anesthesia is very small, although if we may draw conclusions from the work of Crile there is no contraindication to the use of a general anesthetic where local anesthesia is not 100 per cent successful. We feel that in cases in which local anesthesia is not 100 per cent, probably the method itself is not at fault, but there is a defect in the technic of administering the anesthetic. We have found that by limiting paravertebral anesthesia to certain fields we have been much more successful. We have used paravertebral anesthesia in goiters and in all work upon the neck with 100 per cent success. Since 1910, when I became associated with Dr. Farr, we have had no goiters done except under local anesthesia, and we have never added any ether or gas as a supplementary anesthetic in goiter.

In the thorax we have had very much the same success. Blocking the intercostal nerves a little farther out than

the foramen is much easier than blocking at the foramen itself. We have chosen this method of blocking the nerves at a distance for work on the intercostal nerves where we do not wish anesthesia of the posterior branches. The same principle is applied to other regions.

I agree with the speaker, that brachial anesthesia in work upon the upper extremity is particularly successful. However, the infiltration block which Dr. Farr has described so many times is probably more applicable to certain regions. In the lower extremity we have repeatedly reduced Potts' fractures and fractures of the tibia and fibula. We have amputated at the upper third of the thigh, not with the block close to the spine but with regional anesthesia, which anesthesia is between the site which the doctor has shown us and the site of the field of operation, in preference to blocking the various nerves at their exit.

There is one other point which is particularly important, and that is, the anesthetist may well be the surgeon also. It is a good deal better for him to be at the side of the table than to try to do nerve blocking in the next room and have another surgeon perform the operation, who, perhaps, is not wholly aware of the limits of his field of anesthesia, and who keeps infringing on areas that have not been anesthetized. The anesthesia may not be 100 per cent, perhaps it is only 90 per cent, and the surgeon, who is not entirely sympathetic with the method, asks for the addition of ether. If, however, the anesthetist is also the surgeon he will reinforce the anesthesia by infiltration of the field of operation and complete the operation with 100 per cent success instead of a failure.

DR. R. E. FARR, Minneapolis: The essayist has given us an excellent description of this method of anesthesia, and I am practically in accord with all that he says with regard to paravertebral anesthesia with the limitations that he placed on it. It gives me a great deal of pleasure to contrast the method that Dr. Meeker presents to us today with the attitude taken by his late teacher, Professor Labat, who, in opening the discussion on a paper in which I advocated infiltration anesthesia in abdominal work, or infiltration block as the anesthesia par excellence, said that paravertebral anesthesia had no place there, and added in his beautiful French accent: "Infiltration anesthesia should be reserved for those who do not know their neural anatomy." But it shows, gentlemen, the trend of the times. It shows what is going on in the surgical mind in relation to local anesthesia, the difference in the teaching of Dr. Meeker today and that offered by his instructor less than two years ago is, to my mind, the difference between the practical and the theoretical. If we use simple, easy and safe methods, local anesthesia will be brought much earlier to the service of the patient.

I may illustrate the ease with which methods of performing abdominal surgery may be taught by citing the following instance:

I had a gentleman from New York visit me within the last six months. He saw me do one gall-bladder operation. He had never seen a laparotomy performed successfully under local anesthesia. He wrote me the other day that he had given a clinic before visiting physicians and had removed three gall-bladders under local anesthesia with 100 per cent success. It is a matter of accepting what is a fact, and if we can get away from the difficult methods

and use simpler ones, we will get there much earlier, and with the demonstration Dr. Meeker has given us and the limitations he put on the method, I believe we have something to swing to.

I am in accord with almost everything he says with regard to the limitations of paravertebral anesthesia. I would disagree with him in one thing, and that is the method of blocking in the cervical region. It is important to make that simple too.

We have used the direct method as devised by Braun. The needle is introduced transversely and the transverse process is located. This is the portion of bone which is nearest to the skin. If we get behind it we withhold our injection. The needle is passed by preference slightly anteriorly. With this method the large vessels are easily avoided; provided the injection is made with the needle point moving there is no possibility of introducing the solution into the vascular system. In changing the direction of the needle it is, of course, necessary to withdraw its point so that it is external to the cervical fascia. About 30 c.c. of solution is sufficient for each side.

Provided this method is rigidly adhered to in all cases of goiter surgeons will not find it necessary so often to offer the excuse that the patient became "nervous" just at the time that the deeper portion of the dissection was to begin. In my experience patients are much more nervous at the beginning of operations than at this stage. Their so-called "nervousness" is easily due to the infliction of unnecessary pain.

DR. A. C. STRACHAUER, Minneapolis: You are familiar with the story of the man who said "honesty is the best policy. I know it is because I have tried both ways." This is my position regarding local and general anesthesia. I have had extensive experience with both, and was a pioneer in the field of local anesthesia, having performed and reported the first three laminectomies for spinal cord tumors that were performed under local anesthesia in this country. The local anesthesia experience referred to covers the major surgery of the brain, spinal cord, neck, thorax, abdomen, pelvis and extremities, and I, therefore, feel qualified to discuss the subject.

Local anesthesia, particularly regional local anesthesia, is a fascinating subject, so much so that some individuals have become infatuated with it to the degree that consideration of its technique is in danger of overshadowing the actual surgery in question. A thorough knowledge of the technique of local anesthesia is absolutely indispensable to the practice of modern surgery and is a part of the regular armamentarium of the qualified surgeon. In major surgery it is entirely a technical consideration, and is, therefore, together with the other technical training of the surgical specialist, a subject for graduate and not undergraduate instruction.

There are definite indications for the use of local anesthesia in major surgery; likewise, definite contraindications. The indications in the main are the cases in which general anesthesia is contraindicated, which latter constitute a minority and not a majority.

Local anesthesia is not absolutely dependable, i. e., can not always be obtained one hundred per cent, and is neither ideal nor free from complications and danger, the complications including even postoperative bronchitis and

pneumonia—in the past practically always erroneously attributed to the general anesthesia. Per primam wound healing in local anesthesia, particularly in the infiltration method, is not as frequent as under general anesthesia. Some of the serious infections which have occurred, both in my own cases and in those of my colleagues, have, in my opinion, been definitely attributable to the infiltration anesthesia. At our University Hospital, within the last few weeks, a highly competent surgeon lost a patient from local anesthesia. A number of years ago I lost a patient from hemorrhoidectomy done under local anesthesia. Dr. H. E. Robertson, professor of pathology, performed the autopsy and was unable to rule out cerebral embolism. Personally, I believe the local anesthesia was responsible. Unfortunately, the dangers and ill-results experienced are not as glowingly reported as the successful cases. Local anesthesia operations on unsuitable subjects have resulted in the infliction of serious shock. Such individuals do very well and entirely satisfactorily during the time of operation and even during the immediate period of convalescence, and then later have a complete nerve letdown or breakdown, requiring considerable time for recovery. Personally, I have for a long time considered it inadvisable for friends and relatives to be present in the operating room. I likewise believe that it is a mistake for the majority of patients to be present at their own operation.

General anesthesia is still the anesthetic of choice in major surgery. Ether with the preliminary nitrous-oxide anesthetization is our routine procedure. Some patients get nitrous-oxide with just enough ether to obtain relaxation; another group, nitrous-oxide alone; another group local anesthesia and nitrous-oxide according to Crile's teachings; and the final group, local anesthesia alone.

These various forms of anesthesia all have their definite indications, and no one type should be employed to the exclusion of the others.

DR. W. R. MEEKER, Rochester (closing): I am very glad to have had this paper so ably discussed and particularly by men of such wide experience in the handling of local anesthesia problems. The intercostal nerve trunk anesthesia and local infiltration described by Dr. Maxeiner for thoracoplastic work, is that which is employed in the Mayo Clinic by Dr. Hedblom, except that nitrous-oxide oxygen analgesia is also often administered.

The scope of this paper was of necessity limited to only one of the various phases of the local anesthesia problem. There are, of course, many operations and locations in which infiltration anesthesia or field block methods are to be preferred. The extent of the operation, type of sensory innervation, and ease of accessibility of the nerve trunks are always factors to be considered. When the surgeon induces his own anesthesia during operation, infiltration methods are more commonly employed. When the anesthesia is to be completed as a separate procedure before operation, field block and nerve block methods must be relied on.

The indications for local anesthesia are at present not well defined. They will vary in the different surgical centers depending on the surgeons' ability to handle the method and operate painlessly with its aid. A more favorable operative condition is created for most surgeons when the disturbing factor of consciousness is abolished.

As one of our surgeons puts it, the chief difficulty with local anesthesia is that it does not anesthetize "above the ears."

The fact that infection occasionally occurs after the use of local anesthesia, as cited by Dr. Strachauer, does not prove the method more prone to produce infection, particularly the field block and nerve block methods in which no anesthetic solution is deposited in the operative field proper. Novocain is the least irritant of all local anesthetic drugs. Following the injection of quinine-urea hydrochlorid, for example, there may be a round-cell infiltration and fibrinous exudate into the tissues, but such changes are not observed with 0.5 per cent novocain in half physiologic salt solution with 10 minims of 1:1000 adrenalin for each 100 c.c. Local infections may occur after general anesthesia as well as after local anesthesia. It must also be admitted that postoperative pneumonia may follow local anesthesia, but it is not of the aspiration gangrenous type, and is certainly less frequent than when a prolonged deep inhalation narcosis is employed.

It has been well stated that no one anesthetic is the best for all patients, for all operations, and for all surgeons. Having elected to give local anesthesia, the same proposition holds true as regards the three methods of local technic. No one method is the best in every case, but the choice must be made after an analysis of conditions obtaining in any particular case.

NON-SPECIFIC IRRITATION: A PRECIPITATING CAUSE OF THE ANAPHYLACTIC DISEASES OF INFANCY AND CHILDHOOD*

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That many cases of asthma, eczema and repeated upper respiratory infections in infancy and childhood are the result of sensitization to various types of proteins is firmly established. That the onset of many cases presenting these symptoms may be directly traceable to various types of local irritation is undisputed. Any satisfactory explanation of these conditions must therefore correlate the very specific factor of anaphylaxis with the totally non-specific factor of local irritation. It is the purpose of this paper to defend the anaphylactic theory of causation of the morbid conditions mentioned by showing that local irritation is merely a precipitating cause and is dependent upon an underlying anaphylactic condition for its apparent striking effects.

It is common knowledge that such respiratory irritants as smoke, cold or damp air, irritating

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fumes or dust may cause severe attacks of asthma in those subject to this disease. The detrimental effect of external irritants upon eczematous individuals needs no argumentative support. The one authoritative element in the treatment of this condition that has stood the test of time has been the employment of methods purposed to minimize this factor, and the many cases in which cure has resulted are proof enough of the importance of external irritation as a cause of the disease picture. Czerny¹ and many others following in his footsteps have emphasized and established as fact the etiological relationship of impure air to the repeated respiratory infections in exudative children.

Yet there can be no doubt that some underlying intrinsic characteristic of the individual exists in addition to the local irritant, which predisposes to these disease pictures. The inhalation of dust does not cause asthma in all individuals; all infants who are washed in hard water with poor soaps are not the victims of severe facial eczema; not every baby living in the smoky atmosphere of a large city is subject to constant nasopharyngitis and bronchitis. However, the reverse of this is almost universally true. Practically any attack of asthma is made worse by a dusty atmosphere; every case of infantile eczema will suffer from the use of hard water and poor soap; and every baby that is subject to constant colds and bronchitis is affected badly by an atmosphere filled with smoke and irritating fumes. This being true, it would seem that the underlying predisposition of the individual were the more important factor.

Of recent years the theory of anaphylaxis has been advanced to explain all of the conditions mentioned. It has met with measured success, one of the main obstacles in its way being that local causes are so frequently directly responsible for the attacks. The following cases are illustrative of the rôle of protein sensitization.

Case 1. A girl three years of age had been so troubled with asthma, especially during the winter, that her mother had been obliged to take her to Florida during this season. Even while there she had a few attacks, but they were very noticeably lessened in frequency and in severity. Seen during the fall when the weather was getting cold, she was having repeated asthmatic attacks at very frequent intervals. Food tests revealed definite sensitization to oat protein and removal of this food from her diet resulted in immediate cessation of the attacks.

Interesting features of this case are that the asthma was much worse in winter than summer, and that exposure to cold was almost always a precipitating cause. After the diet was prescribed the attacks ceased even in the presence of the same external environment as existed before.

Case 2. A baby girl two and one-half months old was seen because of a skin rash. There was a rather chronic type of eczema over the cheeks, forehead and chin. The skin was slightly rough over the arms and there was a dermatitis over the diaper region. The baby was entirely breast-fed. Local measures were prescribed and the mother was cautioned to eat a larger variety of food. Six days later when the patient was again seen there was a very acute and severe universal eczema. The baby was then tested with the foods of the mother's dietary and sensitization to several foods was determined. A diet eliminating or limiting these foods was prescribed for the mother. Local measures were continued as before. When the patient returned four days later the trunk was entirely normal, the cheeks, forehead and chin were still rough due to the presence of desquamating skin but were not at all red, and all but portions of the diaper region had returned to normal. A desquamation similar to that seen on the face still remained in spots. Three weeks later the mother reported that there was still no trace of eczema.

Czerny¹ attributed the marked tendency to upper respiratory infections in exudative children to an inherent susceptibility of the mucous membranes which made them unusually sensitive to minor irritation. Talbot² has shown that some of these cases may be cured by regulation of diet based upon cutaneous protein tests, thus suggesting that an underlying anaphylactic basis might be the predisposing factor. I have already demonstrated the favorable effects of diet based upon this principle in breast-fed infants.³ Thus it is seen that all of the conditions mentioned are definitely associated with the phenomenon of protein sensitization in at least some cases. If then it can be shown that an underlying anaphylactic condition increases the susceptibility of the individual to local irritation the correlation of these factors will be accomplished for the diseases mentioned and a great handicap in the establishment of the anaphylactic theory will be removed.

In 1920 Auer⁴ published some very interesting experiments. He had noticed while operating on

dogs that had been sensitized and had just received their shock dose of protein that peculiar reactions occurred around the operative wounds, which he attributed to interference as a result of the anaphylactic state of the animals. The purpose of his experiments was to investigate the effect of local irritation on the skin of animals while they were in an anaphylactic state. The work was done on rabbits, the site of irritation being the ear and the irritation being produced by the application of xylol. Xylol, when applied to the skin of a rabbit's ear, produces a definite inflammatory reaction with congestion and mild edema which entirely disappears within a few hours. He found that if a large dose of horse serum were injected in a sensitive animal shortly before the xylol were applied the inflammation resulting was modified in that perfectly tremendous reaction followed, lasting for days and frequently resulting in gangrene of the ear tip. He explained this as follows: At the time of the irritation the blood of the animal contained some of the horse serum that had just been injected. The congestion and edema resulting from the comparatively mild irritation of the xylol caused a concentration of the antigen, or horse serum, at this point. As a sequence to this concentration a local anaphylactic reaction took place which greatly augmented the inflammation due to the irritant. Sensitized animals in which no antigen had been injected previous to the application of the xylol, as well as normal rabbits in which the horse serum had been injected, showed only the ordinary local effects. The author suggested that this phenomenon might have application in the field of anaphylaxis in man.

The analogy in the human is obvious. Many individuals are constantly anaphylactic due to the ingestion of or other contact with proteins to which they are sensitive. In the light of Auer's observations the tissues of such individuals would be at all times hypersensitive and would react to local irritants with a magnified effect. It has recently been shown that, in a great majority of cases at least, the manifestations of exudative diathesis rest upon an anaphylactic basis. Such infants are constantly ingesting foods to which they are sensitive and are therefore in a more or less constant anaphylactic state. Therefore the presence of such mild irritants on the skin as poor soap, hard water, perspiration, and even the air itself produces an inflammatory reaction which we are accustomed to call eczema. The presence of smoke, irritating

fumes, and dust in the atmosphere that such an individual breathes is sufficient to cause some slight congestion of the mucous membranes of the respiratory tract. The resultant concentration of the antigen brings about a local anaphylaxis and we get clinically the symptoms that we recognize as those of a constant cold. The effect of irritants contained in the air in the precipitation of attacks of asthma are explained on a similar basis.

I wish to report the following cases to illustrate the precipitation of asthmatic attacks by local irritation.

Case 3. A boy six years of age was sensitive to foods that he was eating the year around. Ordinarily he presented no symptoms except during the hay fever season. During this portion of the year he suffered from asthma constantly. The relation of this disease picture to pollen sensitization I shall discuss later. The food sensitization was determined during the winter at a time when he was entirely free from anaphylactic manifestations. The mother was warned that if the patient were to come into contact with any marked respiratory irritant he would be apt to have an attack, dust especially being mentioned. Three days later the patient helped a friend sweep out his basement and that night suffered a typical asthmatic attack.

Case 4. A boy between two and three years of age and a victim of asthma was found sensitive to all of the cereal grains and to a number of vegetables which it was necessary that he be given. Large variety of diet, four cereals and five or six vegetables daily, thereby cutting down on the amount of each food, has resulted in freedom from the asthma over a period of three months except on two occasions. At each of these times the patient acquired a cold which had affected the rest of the family. He had no asthma until he began to have fever, running nose and definite evidence of a rhino-pharyngitis and bronchitis, when he began to wheeze and typical attacks of asthma followed. Each attack lasted several days while the fever and other evidence of the infection were present, when each one gradually got better.

Cases are hardly necessary to illustrate the detrimental effect of local irritation on cases of eczema.

The following case is illustrative of the effect of local irritation in the production of repeated upper respiratory infections in anaphylactic individuals.

Case 5. A boy about nine years of age was subject to constant winter colds and bronchitis. This

complaint would manifest itself with the beginning of cold weather in the fall and would be constantly present until the damp and rainy spring weather was over. His mother brought him in about one month after the cold fall weather had started with the hope that the removal of his tonsils would afford him relief. While the tonsils shared the general inflammatory condition of the throat they did not seem badly infected and were not greatly hypertrophied. It was therefore decided to try the effect of diet for a period of one month and if this did no good to remove the tonsils later. Sensitization was determined to a number of foods in his dietary and these were eliminated or restricted. There was no improvement for something over three weeks when rather suddenly all symptoms disappeared. Several months later he was still free from colds and when last heard from he had moved to a large city and had weathered a damp and disagreeable spring without any sign of return of his former complaint.

In all three of these cases the disease pictures appeared in direct response to some form of local irritation. In one case it was dust, in another infection, while in a third it was cold and damp air. In all three there was a constant anaphylactic state since the foods responsible were common articles of diet for the respective individuals. In all three cases the presence of both factors was necessary to produce symptoms, and the local irritative factor being the only one easily recognized it is natural that in the past these diseases should have been attributed to this element alone. However, as shown in the last of these cases, local irritation alone was not sufficient to produce symptoms since the disease picture cleared with the removal of the anaphylactic state, the external environment remaining the same.

If local irritation of a non-specific nature will precipitate anaphylactic diseases in man how much more will this mechanism act when the local irritant becomes a protein to which the individual is sensitive? Such is the situation in certain cases of seasonal asthma associated with hay fever. Case 3 is illustrative. While under ordinary conditions, he had no anaphylactic manifestations except when ragweed was pollenating, during this season of the year he was constantly asthmatic. Here was a local irritant, by virtue of his sensitization, which was many times more powerful than the dust which brought on his one attack. There can be little doubt but that this phenomenon accounts for a

large number of failures in the treatment of this class of cases. Desensitization as it is practiced today is at best a relative thing. After treatment the patient is merely less sensitive than he was before it was begun. Does it not seem reasonable that the presence of an anaphylactic state due to some protein other than that of the pollen concerned might make the mucous membranes so sensitive that, lessened as the irritation from the pollen is, it is still sufficient to bring about slight inflammation in the respiratory tract? If this should occur, then the mechanism that Auer has described would be set in operation and symptoms would result exactly as they did in Case 3 upon the inhalation of dust. It therefore becomes evident that pollen-sensitive patients must be studied for sensitization to all types of proteins and that treatment must take such sensitization into account if consistent results are to be obtained.

SUMMARY

Attention is called to the frequency with which certain diseases which have been recently contended to be anaphylactic in nature are precipitated by local irritation of non-specific nature. Experimental work on rabbits by Auer is quoted showing that the anaphylactic state increases the response on the part of animal tissues to local irritation. Analogous cases in the human are cited in which neither the local irritation nor the anaphylactic state alone were sufficient to produce symptoms but in which the combination of the two produced the disease picture. In two cases local irritation did not produce symptoms after the anaphylactic state had been removed. In another case the reduction of local irritation did not permit relief from symptoms until the factor of anaphylaxis was cared for. It is therefore contended that the condition of anaphylaxis is the underlying factor which is responsible for the conditions mentioned and that the local irritation is merely a precipitating factor which would go unnoticed were its effects not augmented by the presence of the anaphylactic state.

CONCLUSIONS

1. The anaphylactic state produces a state of hypersensitivity of the tissues of the individual in whom it occurs.
2. The effect of local irritation in the production of asthma, eczema and repeated colds in exudative children is to be regarded merely as a precipitating factor dependent for its apparent profound effect

upon the presence of a predisposing anaphylactic state.

3. The local irritant may be a protein as is the case in seasonal asthma associated with hay fever. In this class of case it is therefore necessary to eliminate all proteins producing the state of anaphylaxis if maximum results are to be obtained.

4. The apparent effect of local irritation in anaphylactic individuals is probably in reality a protein reaction, the primary inflammation from the irritant causing a local concentration of the antigen at this point. As a result of this concentration local anaphylaxis occurs and gives rise to the symptoms that we see clinically.

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DISCUSSION

DR. S. AMBERG, Rochester: I was very much interested in Dr. Shannon's paper and think a great deal lies in his conception. The infiltration on the application of xylol in the rabbit sensitized to horse serum, means an antibody antigen reaction elicited by a non-specific agent. Perhaps we have to go even a little further. Sensitized animals do not seem to be sensitive only to the particular protein to which they have been sensitized, but there is a possibility that they are in a state of increased reactivity to other stimuli. Friedberger has called attention to the fact that guinea-pigs sensitized to horse serum seemed to react to the injection of saline solutions differently than those not sensitized. Several years ago in this work it seemed to me that the sensitized animals died more readily than the unsensitized, and in talking with others I found they had the same experience.

I studied the effect of iodoxy benzoic acid on the intracutaneous reaction of sensitized rabbits and it seemed that the sensitized animals died from intravenous injections of doses which were well tolerated by animals which had not been sensitized. The sensitized animal seems to be more vulnerable to many more things than we had believed heretofore. At the same time, while this is true, I think we should perhaps be a little more careful with the thing which we call a stage of sensitization in man. It would be going entirely too far to go into that subject, and I only want to emphasize one or two points. We rely on the skin tests a great many times to establish a specific sensitization of the organism. In a series of tricophytin tests I came across a student who gave a beautiful reaction to tricophytin. He

was watched through infancy very carefully and he never had a tricophytin infection. A number of authors have doubted the specificity of certain cutaneous reactions. Dr. Sauer did some work, at my suggestion, in Chicago. He injected some newly-born infants with some cow's and human lactalbumin intracutaneously. A few reacted to cow's lactalbumin and many to human lactalbumin. These reactions persisted for twenty-four hours. It was a reaction which one could not very well distinguish from a sensitization reaction. About a week later he tested fifty of these cases and now quite a number reacted to cows' lactoprotein and some which had reacted to human lactalbumin did not react then, while some which reacted to cows before did not react at this time. Quite a number of clinical observations leave much to be desired in order to establish the reactions reported as specific sensitization reactions. I think they warn us not to attach too great importance to the skin reaction alone. This criticism does not apply to the cases which Dr. Shannon reported. There we have the skin reaction that followed the injection of the pollen, but in addition other corroborative data.

DR. W. RAY SHANNON, St. Paul (closing): I am very glad to have Dr. Amberg's remarks in regard to the sensitized organism responding to non-specific types of irritation in the absence of the antigen present in the body. That I take to be the sum and substance of his remarks. That, of course, does not conflict in any way with anything I have said in this paper. The results would indicate that these were antigen-antibody reactions.

With regard to the reaction of the new-born babies to human lactalbumin and cow lactalbumin at birth, it is not at all improbable. I have not proved it and have no definite experimental proof, but I do believe that it is not at all improbable that babies are born sensitized to various kinds of food substances and they might be sensitized to cows' milk and human milk as well as to other foods. The reason I believe this is true is because with the first copious nursing of breast milk many babies will break out in a tremendous rash which I can only describe as ordinary hives. We are accustomed to think of hives as being due to protein reaction. I had one patient who had these hives develop and persist during the first ten days of life in the hospital. After the child was taken home the hives disappeared and the mother came back two or three weeks later because the baby had colic. I found the baby was very sensitive to asparagus. The mother had been having asparagus in the hospital but none since she had been at home. You get very severe disorders sometimes with the first copious nursing, which may be anaphylactic and which have been so interpreted. I have had two mothers in my experience who have had asthma and they have been particularly subject to asthma over a long period of years except when they are pregnant or lactating. That suggests on the part of the mother some protective element in the blood which does not permit asthma during pregnancy or lactation. There must be some such protective mechanism. According to all of our knowledge at present one would expect to find that they have antibodies in their blood which protect them at this time, or that there is some non-sensitive condition of the organism of other nature.

There are two clinical observations in the literature which are of interest in connection with this work. One is

the Raschmilewitch reaction in exudative children. This is in a way comparable to the reaction obtained in rabbits. The other is the phenomenon shown by individuals with urticaria in whom scratching of the skin will give rise to unusual reactions in the form of wheals.

One striking case of this phenomenon is reported by McBride and Schorer of a circus performer, known as the human writing pad. Three hours before his turn to go on he would eat three eggs and in the performance would permit the spectators to write on his back with a blunt stick, producing thus linear urticarial wheals. These abnormal reactions ceased in from 6 to 8 hours after ingestion of the eggs.

MILK TRANSMISSION OF POLLEN HAY FEVER*

EDGAR T. HERRMANN, M.D.
St. Paul

The anaphylactic nature of pollen hay fever is at present clearly established. Seasonally, depending on the exciting pollen, certain classes of sensitive patients react to the stimulus of pollen antigen by a series of anaphylactic phenomena known clinically as hay fever. Up to the present, observed data show that an attack of hay fever is produced by the contact of a wind-borne pollen with the mucous membranes of a sensitive individual. For the large majority of cases the exciting pollens, as well as their seasonal incidence, have been clearly established through the researches of Walker and others. It is the purpose of this paper to show that the ingestion of cow's milk containing ragweed pollen protein may be the exciting cause of an attack of hay fever.

A review of the case histories of pollen-sensitive individuals discloses certain curiously interesting facts. Thus such individuals are often free from symptoms when the nature of their various occupations keeps them daily indoors, immured in large office-buildings, hospitals and the like. Experience rapidly teaches them to avoid the open country during the pollen season, numerous records illustrating the dire results of week-ends in the country, automobile trips through the fields, etc. In most instances the exposure of the patient to wind-borne pollen is easily demonstrated, yet instances of severe attacks occur when such exposure cannot be shown. Observation of a number of cases in which the severity of the attack seemed out of all proportion to possible exposure led to investigations, the

results of which are embodied in the present preliminary report.

Ingestion of cow's milk containing ragweed pollen protein as the possible exciting cause of an attack of hay fever seemed feasible from two points of view. In dairy husbandry the point is noted that during the ragweed season dairymen sometimes have trouble with slightly tainted milk, the taint presumably being due to ragweed tops eaten by pasture cows during this time of year. Tainted milk has usually been ascribed to the presence of volatile oils in certain sorts of herbage eaten by cattle, other causes, if any, not having been determined. The possibility that such a taint was perhaps due to the presence of pollen protein in the milk was suggested by the recent work of Shannon. He has demonstrated the presence in human breast milk of food proteins ingested by the mother, as well as the effects of feeding such milk to sensitized breast-fed infants. His conclusions seemed in part to bear on the present problem and the conviction that cow's milk can and often does contain ragweed pollen protein in sufficient amounts to cause attacks of hay fever by its ingestion led to the following experiments.

Both clinical and experimental evidence was sought. On the laboratory side experimental anaphylactic shock in guinea-pigs seemed the method of choice, the technique employed throughout being that of Besredka. Accordingly, three guinea-pigs were each injected intra-peritoneally with three minims of a 1-100 solution of short ragweed pollen. Antigen was procured, thanks to the kind co-operation of Mr. Eccles of the College of Agriculture, University of Minnesota. Under his direction a Holstein cow was fed on fresh ragweed tops, as follows:

Aug. 30, P. M.—Fed 4 pounds of short ragweed tops.

Aug. 31.—Fed 10 pounds of short ragweed tops in two feeds.

Following this two samples of milk were obtained and mixed, one evening milk on August 31st and the other morning milk obtained on September 1st. A sample of this milk was used as the antigen. Fourteen days after the sensitizing injection, each of the three pigs was injected subdurally with .25 c.c. of the Holstein milk obtained as described above. Within a half minute following injection each of the three pigs showed signs of marked irritation. Scratching of the muzzle and restless run-

*Presented before the annual meeting of the Minnesota State Medical Association, Minneapolis, Oct., 1922.

ning about were shortly followed by somersaults, the animals being thrown on their sides, from which position they strove violently, and often ineffectually, to regain their feet. Respiration became dyspneic, this being especially noticeable in the quiet intervals following convulsive attacks. The latter were often preceded by antics in which the animal affected turned round and round upon itself, often dragging one or the other hind leg as if paralyzed. After the first ten minutes the convulsive attacks came at longer intervals, during which the animals sat huddled up and quiet, showing marked respiratory difficulty. None of the pigs died within the first ten minutes; all were found dead some hours later.

At the same time, for purposes of control, two normal, non-sensitized guinea-pigs were also each injected subdurally with .25 c.c. of the same milk. Following the injection these animals exhibited no unusual symptoms. Watched for over an hour they behaved quite normally. Neither of these animals died. Since neither of the control animals showed any of the symptoms observed in the three sensitized pigs, local irritation produced by intra-theal injection may be excluded as causing symptoms in the former case, and it appears clear that the three sensitized animals reacted by anaphylactic shock to ragweed pollen protein present in the Holstein milk used in the shock dose.

Clinically, observations were conducted on two individuals, one a patient with hay fever, the other a normal individual not subject to hay fever. Cutaneous skin tests carried out according to Walker's technique resulted as follows:

Patient with Hay Fever:

Ragweed, short + + +

Ragweed, giant + +

Dahlia + +

Goldenrod + +

Goldenglow 0

Sunflower 0

Holstein cow's milk containing ragweed short pollen protein +

Lactalbumin 0

Casein 0

Powdered cow's milk (control) 0

Normal Individual:

Negative reaction to all pollens.

Negative reaction to Holstein cow's milk containing ragweed short pollen protein.

Negative reaction to powdered cow's milk.

A review of these reactions shows that the ragweed-sensitive patient gives a group reaction to many members of the *compositæ* family, the most marked wheal being that produced by short ragweed. To be noted is the fact that, whereas ordinary cow's milk, lactalbumin, and casein give no reaction, the milk containing ragweed pollen protein gives a definite urticarial wheal. This circumstance emphasizes again the marked delicacy and specificity of the cutaneous reaction. In contrast to the sensitive individual, the normal control gave negative reactions to all skin tests.

Following the skin tests each of the two persons was given a glass of the ragweed-containing milk to drink. The normal individual had no reaction of any kind after ingestion of the milk. The ragweed-sensitive patient, who had been free of all hay fever symptoms for twenty-four hours before drinking the milk, complained of burning of the eyes, lacrimation, itching of the roof of the mouth, etc., within a half hour after its ingestion. Within an hour a typical attack of hay fever developed. On the following morning this patient reported that she had spent the worst night of the year, having been kept awake not only by hay fever, but asthma as well. With the patient's cutaneous reaction to the milk in mind, such an attack was not unexpected. It is interesting to note that no gastro-intestinal symptoms appeared following ingestion of one glass of the milk, the point of attack being the nasal mucous membrane, conjunctivæ and bronchi. Chronic irritation of these tissues with consequent lowered resistance during the pollen season, may be factors in the production of such selective anaphylactic phenomena, when, as here, the antigen acts centrally. Subsequently, another hay fever patient was given a glass of the same milk with the same results.

SUMMARY

1. Previously sensitized guinea-pigs react by anaphylactic shock to intra-theal injection of milk containing ragweed-pollen protein.

2. Ragweed-containing milk gives a positive cutaneous reaction in high dilution in sensitive individuals.

3. Ingestion of milk from a cow that has eaten ragweed tops produces clinical hay fever within a half hour after ingestion of the milk.

4. Absence of gastro-intestinal symptoms following one glass of ingested milk and the appearance of selective anaphylactic phenomena in the

upper respiratory tract may be due to chronic irritation and decreased resistance of tissues involved.

5. Ragweed pollen protein is found apparently unchanged in the milk of cows that have eaten ragweed tops some hours earlier.

DISCUSSION

DR. HENRY L. ULRICH, Minneapolis: There is no question but that Dr. Herrmann has definitely demonstrated a rather unique method of transmission of ragweed pollen. He has also demonstrated the fact that he is a very careful observer of hay fever patients.

I should like to ask his explanation of this phenomenon observed in some hay fever patients. After a thunderstorm at night, when the pollen presumably has been washed out of the atmosphere, some of the patients complain of exacerbation of their systems. They come to you stating they have had a most severe attack this morning, following the storm of the night. To me this is a puzzling symptom of this form of allergy. One explanation may be that these people become extremely neurotic and highly susceptible to atmospheric, emotional, or physical changes in their environment, and in this instance the barometric change causes the hay fever attack. This is merely an assumption.

Perhaps a better contribution to this discussion is an effort on my part to make clear to you the looseness of the term anaphylaxis. The broad field of hypersensitiveness is divided into two divisions: anaphylaxis and allergy. Allergy is a form of sensitiveness commonly seen and experienced in man. Anaphylaxis is only seen in animals and is purely experimental. I will try briefly to sketch the difference in the two conditions. In anaphylaxis there is always present an immune body which can be demonstrated by the methods of immunological reactions. In allergy an immune body has never been demonstrated. Anaphylaxis demands a protein substance as a sensitizer. Almost any chemical substance can produce allergy. I have seen an allergic state to ordinary mercurial salts.

The results of treatment are different. In anaphylaxis you can get complete desensitization. In allergy we can only hope for hypo-allergy, or partial desensitization. That is important in regard to hay fever patients. One must not be disappointed because complete results are not obtained, for we cannot get complete results in allergy.

Another point about allergy is the factor of inheritance. Fifty per cent of all allergics give a familiar history of some form of allergy. Anaphylaxis is always an acquired and artificial state. It is fitting therefore to speak of allergy (which means an abnormal reaction) only in relation to human sensitiveness, since anaphylactic conditions have never been demonstrated in the human. Man, like many animals, is free from or refractory to anaphylactic shock and its milder form, whereas the guinea-pig, the dog and rabbit named in order are the animals par excellence for demonstrating that form of immunity called anaphylaxis.

DR. CHARLES N. HENSEL, St. Paul: Dr. Hermann is to be congratulated for his ingenuity in devising this method for studying a new avenue of approach for pollen hay fever.

This is the first study of its kind (so far as I know) and

Dr. Hermann's conclusions are so logical that *in the main* I feel inclined to agree with him.

It has been shown that hay fever is produced by four routes and, in the majority of cases, is an allergic phenomena, due to proteins. We can use the four "I's" to classify these routes, namely, infection, inhalation, ingestion and inoculation. The route of Dr. Hermann's, if we can accept it, belongs to that of the ingestion class.

But while we are attempting to explain obscure attacks of hay fever by the ingestion route we want to be sure that it is not after all produced by the inhalation route.

There are many things hard to explain in hay fever patients. For instance, the fact that some days they are worse than others. I have always attributed this to the wind, because, as Dunbar showed years ago, the pollen is so light that it can be carried three miles. He put out glycerine-covered plates in the center of the city of Hamburg where he knew there was no pollen within three miles and recovered the pollen on these plates. Last year, patients told me that they had hay fever on Isle Royale for three or four days (the first time this was ever known), following several days of strong wind. This might be explained by contaminated milk supply, since the milk is only brought there by boat twice a week and the persistence of the attack might be for the three to four days while this milk lasted.

The question also arises whether the ragweed pollen fed the cow is the same pollen recovered in the milk or whether the light pollen settles into the milk during milking and handling afterwards.

This study may be so valuable in the handling of hay fever patients that it is too bad Dr. Hermann did not go a little farther in his laboratory studies and include a series of inoculations on previously ragweed-sensitized guinea-pigs, with milk from cows who were known not to have eaten ragweed.

While protein sensitization is supposed to be absolutely specific, it is admittedly not so entirely so in the case of milk as in the case of sera. Now, in milk we have possibly two proteins—that of the milk itself and that of the supposedly contained ragweed pollen. The anaphylactic reaction might have been due to the milk protein as well as to the ragweed pollen protein. The results would have been more conclusive if an additional series of tests were made with non-pollen-containing milk.

Finally, before we entirely accept this ingestion route as another avenue of approach for the production of hay fever, we must consider what happens to the ragweed pollen protein during bovine digestion, and also human digestion. Much work has been done on the split protein and the amino acids and while, apparently, proteins may be absorbed unchanged from the intestinal tract, the split protein in the form of an amino acid is the usual condition in which the protein enters the blood.

Is there enough pollen protein identity in this split protein to bring about anaphylactic phenomena? Also, some of these pollen hay fever cases are likewise sensitive to foods, i. e., corn, cantaloupe, etc.—skin tests, would, of course, rule this out.

DR. S. AMBERG, Rochester: I agree with the preceding speaker that the practical result of Dr. Hermann's work

might be strengthened in the way he has indicated, by injecting not only the milk into the sensitized animal, but other proteins, and paying attention to other points, such as drop of temperature and so on in the animals.

My remarks will be chiefly confined to those of Dr. Ulrich. He pointed out the distinction between allergy and anaphylaxis. I happened to be an assistant of von Pirquet's shortly after he introduced this term and he meant simply an altered reactivity of the organism to any stimulus. Under these conditions it is evident that the anaphylaxis, immunity, and so forth, is simply one of the manifestations of allergy. Dr. Ulrich has made one point which, in all of the work on allergic phenomena in the clinic or laboratory, I believe has not been sufficiently emphasized, and that is it makes all the difference in the world by what mechanisms the various reactions are produced.

DR. W. RAY SHANNON, St. Paul: I feel that Dr. Hermann's paper is extremely important from a practical standpoint. It explains a great many cases one sees in which one cannot account for particular attacks of hay fever, or exacerbations of the condition. If the protein can be introduced by the ingestion of cow's milk it will permit of an explanation of some of the late attacks which might occur through ingestion of dairy products which have been kept for some time in storage.

I want particularly to emphasize one point which he brought out and did not emphasize in regard to a possible explanation as to why the symptoms after the ingestion of hay fever pollen would be localized on the mucous membrane of the nose and throat. He suggested that this is due to the congestive condition there which is always present and which might cause the concentration at this point. This is extremely important and is probably an accurate explanation of affairs in some cases at least. It has been shown in rabbits that the injection of a large amount of the foreign protein into a sensitized animal, combined with local irritation at the time of injection, will bring about an intense reaction at point of irritation. The blood of the animal containing the antigen and the antibody at the same time, and being concentrated at the point as the result of a comparatively mild inflammation due to the irritation, gives rise to a localized anaphylactic effect which may be tremendous in extent. This unquestionably will explain some attacks of hay fever occurring where the antigen is ingested and may possibly also explain the condition which Dr. Ulrich brought up in which hay fever patients are much worse in a damp atmosphere and after a storm. There is no question but that it explains certain cases of asthmatic conditions where a damp atmosphere and local conditions, such as dust, will precipitate attacks. The individuals who are asthmatic, or at least a great many of them, are constantly anaphylactic from food which they are ingesting, and local irritation of some sort is all that is required to cause concentration at a local point and bring about an allergic effect.

DR. EDGAR T. HERRMANN, St. Paul (closing): The specificity of antigens in experimental anaphylaxis has been clearly demonstrated by Besredka and has been borne out by Dr. Shannon's work. The sensitizing solution for pigs used was an aqueous solution of ragweed extraction. The toxic injection was of milk.

Dr. Ulrich's observation of severe attacks of asthma just following a storm may be explained, in part, as follows: Preceding a storm there is usually an increase of wind velocity which markedly increases the number of pollen units per cubic yard of air. With the low barometric pressure during a rainstorm these pollen units, usually high in the atmosphere on clear, dry days, are brought down to the earth. This exposes the patient to a much larger number of pollen units than he would be exposed to under ordinary conditions. This excites an attack of asthma which probably reaches its height some hours after the storm has abated. Thus, when the pollen itself is washed out of the atmosphere, the attack of asthma is usually at its height when the atmosphere itself has become practically pollen-free.

THE RELATION OF THE GENERAL HOSPITAL TO THE TUBERCULOSIS PROBLEM*

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Practically every general hospital is today receiving tuberculous patients. In some cases the patient is already in the hospital when the diagnosis is made; in some instances he may have been sent in for surgical treatment. Sometimes he is in a ward when the diagnosis is made. If not in the ward he is usually found in a small room, the principal reason for its use being that the patient can be isolated. The physicians and nurses give him whatever attention is unavoidable at arm's length and ask his friends to remove him at once to a sanatorium or to his home, as the hospital does not receive tuberculous cases. If a private patient, the fact that he is tuberculous is sometimes practically ignored so far as rational precautions are concerned and the complication or emergency is treated without regard to his tuberculosis. The patient's special need for rest and fresh air is not met and the weeks spent in the hospital for surgical care are lost as regards treatment for tuberculosis.

A hospital's first function is the provision of modern up-to-date care for all classes of patients admitted. Limitation of its services to particular classes and types of patients limits the usefulness of the institution. A general hospital, especially a hospital which serves as a community or city hospital and which is designed to meet the community's hospital needs, should meet all medical emergencies. Naturally the hospital beds must not be kept filled with chronic cases but in tuberculosis

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there are many emergencies which can not be met in the patient's home. Some of these can not be met at the sanatorium. In other words many cases of tuberculosis are acute cases which need hospital care for nursing for a short period. It seems to the writer that the hospitals should make definite provision for the following classes:

1. Undiagnosed cases.
2. Acute febrile cases awaiting admission to sanatoria.
3. Hemorrhage cases.
4. Cases requiring surgical or other special treatment.
5. Moribund cases that can not be suitably cared for at home.

There is no task that requires greater skill and judgment than the decision in border-line cases whether the patient is suffering from active tuberculosis and must immediately make a radical change in his whole life plan or has symptoms and signs due to other causes. The question often cannot be settled in a day or week but requires careful observation for a somewhat longer period. In the meantime all of the hospital's diagnostic resources may be needed. Unless the hospital is equipped to care for him while a "suspect," providing him with all the necessary conveniences for taking the open air and rest cures, valuable time may be lost at one of the most critical stages in his disease. At present the only even fairly satisfactory alternative is to have him sent to the sanatorium as a suspected case. This involves more or less publicity and perhaps an unwarranted assumption on the part of friends and neighbors that he has consumption.

In many communities the patient can not be admitted promptly to a sanatorium on account of the limited number of sanatorium beds and the existence of a waiting list. Often a delay of several weeks is necessary before he can be received. Frequently prompt and efficient treatment spells success, while delay even for a short time means failure. This is especially true of febrile cases in the early stage of the disease. Accordingly the hospital should be equipped to provide sanatorium care for such cases until they can be admitted. The hospital should not, however, attempt such care as a substitute for the sanatorium for prolonged periods.

Very rarely can patients suffering from sudden pulmonary hemorrhage receive the specialized care needful in that emergency at home. The absolute rest, calm surroundings, nursing, and medical care needed can almost never be secured in a private

house. As soon as practicable the patient should be removed to a hospital properly equipped to give modern treatment for this complication.

Consumptives develop appendicitis and mastoiditis the same as other people; they are subject to accident and in some instances their tuberculosis itself needs special surgical care. Casts must be applied, tonsils removed, artificial pneumothorax administered, heliotherapy given. Not all sanatoria are suitably equipped for giving these special treatments. In some cases of advanced pulmonary disease, rib resections or other surgical procedures may be beneficial. There are many occasions when consumptives must have hospital care, and it is not fair to them or their physicians that while receiving it they should be improperly housed.

Patients who have only a few days or weeks to live should not have to take tedious journeys to more or less distant sanatoria where their presence will have a depressing effect upon cases susceptible of permanent benefit. They should be tenderly cared for nearer to their friends and relatives but under supervision and in surroundings where they will not menace the health of others.

Teaching hospitals can not give a well rounded course of instruction to internes or nurses without suitable training in the diagnosis, care and treatment of the disease they will meet more often than most others. Too many doctors and nurses suffer from unwarranted phthisiophobia and handle their tuberculosis patients with an imaginary ten-foot pole. The actual facts concerning opportunities for infection and the rôles of the predisposing and exciting causes should be taught them so that they may use intelligent and not foolish means for protecting themselves.

The need for training in diagnosis as well as in modern treatment of the various phases and complications of a most common disease is evident from the lack of knowledge of these matters shown by practitioners.

Only by providing for such care for a greater number of tuberculous patients in general hospitals can this need be met. It is even likely that if there were sufficient opportunities for acquiring a thorough knowledge of the principles of modern treatment of tuberculosis in hospitals, practicing physicians could often be safely intrusted with the supervision of tuberculosis patients at home. A large proportion of consumptives must inevitably be cared for at home during a considerable portion of their illness and the competent supervision and

guidance which is essential to their success in regaining and retaining improved health should be attainable. This is especially true before and after their term of training and care at the sanatorium. Physicians have not hitherto had opportunities for fitting themselves for this important work.

Miss Virginia M. Chitwood¹ of New Jersey has recently made a study of twenty-six of the leading hospital training schools in that state as regards instruction of nurses in the care of tuberculous patients. Only one school of the entire twenty-six give any regular ward training in the care of such cases. Eight of the twenty-six never receive any cases of tuberculosis, refusing their admission to the hospital.

The spread of tuberculous infection in a well conducted hospital openly receiving tuberculous patients under proper precautions is even less likely than the spread of many infections now treated there as a matter of course. Pneumonia, typhoid fever, infected wounds, erysipelas and other skin troubles are more or less generally admitted to hospitals. Under sensible regulations, in suitable quarters, tuberculous patients might equally well be admitted. There are very few authentic reports of attendants having been infected by tuberculous patients in hospitals or sanatoria.

The standard provision of sanatorium beds for the average community should be, according to the National Tuberculosis Association and the Framingham Health and Tuberculosis Demonstration,² one to two beds for each annual death from the disease. It is questionable whether a community is justified in increasing the number of sanatorium beds above this quota, yet there are always from five to ten active cases of tuberculosis for every death and many of them need hospital care at least. This need could be met more readily by the provision of a comparatively small number of beds in general hospitals for the classes of cases mentioned above than by the indefinite enlargement of sanatoria. As soon as possible such patients should be transferred to sanatoria or to home care under skilled supervision.

There should be more porches and conveniences for open-air treatment in general hospitals for the benefit of non-tuberculous cases. Surgical and mental cases especially may have convalescence hastened by access to the open air and sunshine. For tuberculous patients admitted for a temporary stay in a general hospital, the best type of accommodation provided in an up-to-date sanatorium

should be furnished, including suitably sheltered and screened porches connected with private rooms or very small wards by wide doors through which beds equipped with large easy running casters can readily be rolled. Small, dark rooms in the "old part" of the hospital will not meet the indications for proper treatment.

Taschman and Stivelman³ sent a series of questions to many of the largest hospitals and sanatoria in the country. An analysis of the information showed that only about 50 per cent of the 2,500 or more large general hospitals replying had a tuberculosis service and that where it was absent its establishment was not contemplated. On the other hand 90 per cent of about fifty competent observers in the field of tuberculosis considered it helpful and advisable to have beds set aside in general hospitals for the purpose of the study and diagnosis of cases of pulmonary tuberculosis before they are sent to sanatoria for treatment, and favor having a special pulmonary tuberculosis service attached to the general medical service of every large hospital.

The problem of securing adequate and intelligent supervision at home for patients who have been at sanatoria for longer or shorter periods is one of the most serious now confronting tuberculosis work. The treatment of such cases is no simple matter. The technique of treatment is being carefully worked out and standardized in the best sanatoria, but physicians in general are not familiar with it or interested in it. Articles on tuberculosis appearing in medical journals are quite systematically passed over and physicians who profess to be alarmed over the encroachments of State Medicine on private practice are entirely indifferent to the fact that tuberculosis patients are now being cared for to a large extent by specialists and visiting nurses employed by the community. They are needed but the problem is too big for them to meet without the efficient aid of qualified practising physicians.

Dr. F. C. Smith well described the situation in his "Outline of a Campaign for the Control of Tuberculosis,"⁴ as follows:

"It is an unfortunate fact that the diagnosis and treatment of tuberculosis is relegated largely, by common consent, to specialists. The belief in special climates is responsible in large part for this. The general fear of contagion, poor results by the novice and unremunerative character of the practice also popularized the unhappy custom, which prevails even to the present time, of advising 'a change.' In the incompetence of the general practitioner, in his self distrust and timidity, his fear of the effect on

his practice of a tuberculous patient in his waiting room, in his ignorance of the proper and inspiring home management of such a patient, are to be found the chief reasons for this prevailing custom. The closing of general hospitals to the tuberculous completed the exile, and drove the outcast either to the public dispensary provided for the poor, or to special institutions in special climates. Today we are reaping the fruits. An indifferent profession complacently witnesses the migrations of a fatuous laity and resists the encroachment of the tuberculous upon hospital beds jealously reserved for surgical patients. As a result the general practitioner never learns the essentials of tuberculosis and the vicious circle is complete. In almost any cross-road town can be found a surgeon reputed to successfully remove the appendix, but in our greatest cities we count upon the fingers of one hand those competent to speak with authority on the most common of all serious diseases."

Dr. Smith suggests:

1. Professorships in tuberculosis in all medical schools.
2. Special examinations in tuberculosis of state licensees.
3. Open general hospitals to the tuberculous.
4. Popularize home care in the home climate.
5. Develop hospital centers and other facilities for diagnosis and teaching.
6. Provide opportunities for short courses in tuberculosis and induce large numbers of practicing physicians to attend. In short, "Tuberculosis for the general practitioner as well as the specialist."

The views of Surgeon General Cumming of the United States Public Health Service are shown in the following telegram sent by him to the American Medical Association at its New Orleans Session.⁵

Washington, D. C., April 27, 1920.

President, American Medical Association,
New Orleans, La.

I desire to urge more active participation by the general practitioner and by general hospitals in treatment of tuberculosis to insure earlier diagnosis, properly trained interns and other personnel to popularize treatment in the home climate, and to provide additional facilities. I earnestly endorse the resolution passed by the National Tuberculosis Association in 1916, recommending that general hospitals should admit tuberculosis patients and provide separate wards for that purpose. Sanatoriums and specialists in tuberculosis will always be needed and we should have more of them, but I believe that success in the anti-tuberculosis campaign is largely dependent on, first, convenient facilities for observation and prompt treatment of patients with open tuberculosis; and, second, in a sharpened perception and higher degree of skill by which the family doctor will make an early diagnosis or even forestall the development of clinical tuberculosis in the adult before a definite diagnosis is possible; to provide adequate care for tuberculous ex-service men and others, and protect infants

from infection. Enlist the aid of the general practitioner, allay phthisiophobia, and improve home treatment of tuberculosis. The opening of general hospitals to this most common of all serious diseases will materially assist.

Cumming, Surgeon General, U. S. P. H. S.

At its twelfth annual meeting in Washington, D. C., in May, 1916, the following resolutions were passed by the National Association for the Study and Prevention of Tuberculosis:⁶

Whereas, in the past the tendency of general hospitals has been to exclude cases of tuberculosis. and

Whereas, it has been demonstrated in a number of such institutions that this class of cases may be admitted into separate wards without detriment to other patients, and

Whereas, both for humanitarian reasons and for purposes of instruction, there is need for a change of policy in this regard, therefore be it

Resolved, that The National Association for the Study and Prevention of Tuberculosis recommends to general hospitals through both their medical and lay boards, that separate wards, one for each sex, be established for the care of such cases.

At its meeting in New York in 1921 the Association made it plain that it did not approve of the prolonged detention of favorable cases in general hospitals as a substitute for sanatorium care.⁷

The following action was taken by the Council on Health and Public Instruction of the American Medical Association at its midwinter conference in March, 1921, and reported to the House of Delegates of the Association at the Boston Session in June, 1921:⁸

At the New Orleans Session in April, 1920, a telegram from the Surgeon-General of the United States Public Health Service was presented, urging the active participation of general practitioners and general hospitals in the treatment of tuberculosis. At the meeting of the Council, held November 11, 1920, a communication from the Surgeon-General on this subject was received and the Surgeon-General was requested to formulate the action which he wished the Council and the Association to take. In response to this request the following resolution has been submitted, which is herewith referred to the House of Delegates for action with the recommendation that it be adopted:

Whereas, there is an unfortunate tendency in various parts of the United States to exclude patients, even of tender years, with pulmonary tuberculosis from general hospitals; and

Whereas, this tendency results chiefly from incomplete knowledge of an earlier period when the simple prophylactic measures were not thoroughly understood and when the dangers of dissemination were greatly over-estimated; and

Whereas, the exclusion of tuberculous patients from general hospitals has resulted in depriving large numbers of tuberculous patients from proper hospital care in emergencies and their exile against their wishes, to special institutions often remote from home and friends; and

Whereas, this practice has resulted in the relegation of tuberculosis largely to specialists, to the great detriment both of tuberculous patients who are compelled to seek in special places the necessary medical skill, and of the general practitioner who is thus deprived of the opportunity to acquaint himself with the diagnosis and treatment of tuberculosis; and

Whereas, it has been demonstrated in a rapidly increasing number of institutions that tuberculous patients may be admitted into separate wards in general hospitals without detriment to other patients; and

Whereas, the admission of tuberculous patients to general hospitals for temporary periods will tend to allay phthisiophobia, improve the home treatment of tuberculosis and popularize the home climates without in any way discounting the value and need of special tuberculosis sanatoria for patients suitable for and desiring treatment therein; be it

Resolved, that the American Medical Association recommends that general hospitals in all parts of the United States should provide separate wards or separate rooms for the care of tuberculosis patients, and that such patients be never denied admission at least in emergency and for temporary periods, because of the character of the disease from which they are suffering.

The House of Delegates, through the Committee on Legislation and Public Relations, formally endorsed the recommendations of the Council on June 9, 1921, as follows:⁸

Resolved, that the American Medical Association recommends that general hospitals in all parts of the United States should provide separate wards or separate rooms for the care of pulmonary tuberculosis patients, and that such patients be never denied admission at least in emergency and for temporary periods, because of the character of the disease from which they are suffering. The committee believes that the passage of this recommendation will tend to assuage the public fears, as it is well established that properly conducted wards or hospitals for the tuberculous constitute no source of contagion even in thickly settled communities.

SUMMARY

Many general hospitals are now admitting tuberculous patients, but in many cases not frankly and openly, and without adequate provision for their care.

The following classes of cases should be freely admitted into suitable quarters for a limited time: (1) Cases requiring diagnosis; (2) Cases on the waiting list for admission to sanatoria; (3) Hemorrhage cases; (4) Cases requiring surgical treatment; (5) Moribund cases.

The United States Public Health Service, The American Medical Association, and the National Tuberculosis Association all favor special provision for tuberculous patients in general hospitals.

The co-operation of practicing physicians skilled

in the diagnosis and modern treatment of tuberculosis is needed to supplement the work of the sanatoria and the visiting nurses in the control of tuberculosis.

Suitable provision for the care and treatment of certain classes of tuberculous patients in general hospitals will provide greatly increased opportunities for the training of nurses, internes and practicing physicians in the observation, supervision and care of persons suffering from a most common disease.

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DISCUSSION

E. S. MARIETTE, M.D., Glen Lake Sanatorium, Oak Terrace, Minn.: Almost everyone is infected with the tubercle bacillus before the eighteenth year of life. The death rate from tuberculosis has decreased nearly one-half since 1904, while incidence of infection, or morbidity, has remained about the same and our knowledge of how it takes place has increased but little. Therefore, in the light of our present understanding the paramount issue in the tuberculosis problem is not one of guarding against infection, but of our mode of living. Do not misunderstand me, I do not think that we should ignore the question of infection, but we should lay most of our stress on teaching the individual how to take care of that infection and that means how to live. Realizing that, then, the precautions that can be taken in a general hospital should be sufficient to allay the fears that any internes or physicians may have regarding the matter. The fear which some people have is sometimes laughable. A short time ago I was called before the Grand Jury and in the course of conversation I invited them out to the sanatorium for lunch. They all declined, with thanks. One man said that he had been very brave and had stuck his nose inside the door of one of the institutions in Minneapolis; the rest would not even do that. That type of phthisiophobia is the thing which hinders the treatment of tuberculosis in a general hospital. Of course, the emergency case should not be transported to the sanatorium, which is usually some distance from the city. Emergency care should be given in a general hospital.

Then there is the doubtful case where a diagnosis is necessary. The general hospital, whether municipal, state-

or private, should afford the best diagnostic facilities in the community, and while the diagnosis is being made the patient can also be receiving in the general hospital sanatorium treatment, which is based on rest, fresh air, good food and exercise at the proper time. By rest I mean bed rest. Certainly you will all agree that a patient can be put to bed in a general hospital just as easily as in a sanatorium. The windows can be kept open also, thus permitting the good outside air to enter the room. The chief benefit to be derived from fresh air is the tonic effect due to motion and is much like the tepid bath in typhoid.

Then good food. That, together with fresh air, is the greatest stumbling-block in the treatment. A physician recently brought his wife to the sanatorium for treatment and after a few days he said: "I don't understand, everyone here appears to be well nourished. Just what is there to that 'good food' slogan?" We then went over the four things again and he replied, "At last I see, you mean rest is more important than good food and outside air. My wife goes to bed and stays there until you say that she can get up."

McCann of the Bellevue Hospital states that in certain cases where the temperature has been reduced to normal upon a moderate maintenance diet they have had an increase in temperature and physical findings, together with an increase in weight, when their diet was pushed beyond the limit for that individual. Physical findings and temperature increased even though they gained weight on the increased diet, thus proving that a gain in weight is not always accompanied by a decrease in findings and general improvement in the patient. He carried his experiments still further and noted a decrease in physical findings and temperature upon a return to the moderate maintenance diet.

I agree with Krause when he says that the control of the tuberculosis problem is as assuredly non-specific as the cause is specific. The great decrease since 1904 has not been due to treatment of the active case alone, but to the increase in the knowledge of tuberculosis—better sanitary laws, higher wages, etc., and the general improvement in Public Health.

The general hospital is an ideal place to instruct internes and nurses who in turn can disseminate this knowledge in their respective communities.

DR. A. T. LAIRD, Nopeming (closing): I feel very strongly that the sanitarium alone will never be able to take care of all the tuberculous cases. Every patient has to be taken care of at his home at some time during the course of the disease. We as physicians have practically given up the care of tuberculous cases and refer them to sanitariums and specialists, expecting them to take the entire charge of the case throughout the whole duration of the history. The diagnosis of tuberculosis requires special experience and so does the treatment, and there is now no place for the general practitioner to acquire the special skill in diagnosis and special skill in treatment which is largely a matter of specialist supervision. This opportunity should be provided in the general hospital, so that physicians may be equipped and able to supervise properly at their homes cases of this most common disease.

THE "LOCAL" WASSERMANN REACTION: A NEW DIAGNOSTIC AID IN PRIMARY SYPHILIS*†

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INTRODUCTION

The importance of a positive diagnosis of syphilis in the primary stage is too obvious to require stress. Proper treatment before the stage of systemic invasion is comparable with efficient prophylaxis after exposure in saving the patient from the later ravages of the disease. In every case, the first question confronting the physician is: "Are we dealing with a genuine primary chancre?" The subsequent treatment and outcome of every case necessarily hinges first of all upon the answer to the question of diagnosis. In the diagnosis of primary chancre the following are of aid: (1) history of exposure, with the time of occurrence and the duration of the lesion; (2) appearance of the lesion, with satellite lymphadenitis or secondary eruption, if present; (3) Wassermann reaction on the blood serum; (4) finding of *Spirocheta pallida* under the dark field microscope; and (5) the "local" Wassermann reaction, with which this paper is especially concerned. Very briefly, of these five diagnostic criteria, the history and appearance of the lesion are usually of substantiating but rarely of conclusive value in the diagnosis. The occurrence of secondary skin manifestations roughly parallels the appearance of a positive blood Wassermann; both indicate the stage of systemic invasion and neither is present in the majority of cases in the primary stage. The finding of *Spirocheta pallida* under the dark field microscope is, of course, the most reliable and the single undeniable criterion of a primary chancre. When carefully searched for by trained observers, *Spirocheta pallida* is found in approximately 75 per cent of cases of demonstrated primary chancre. Leaving out of account the "local" Wassermann reaction, whose value we are about to consider, the dark field is the only positive means of diagnosing beyond dispute a genuine primary lesion. A negative dark field, of course, does not rule out the

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diagnosis, though it, too, is of value. In the absence of a positive dark field, we have found the "local" Wassermann reaction to be the only positive means of diagnosing primary lues.

THE "LOCAL" WASSERMANN

The "local" Wassermann reaction is simply the ordinary Wassermann reaction carried out on the serum exuding on the surface of a primary lesion, instead of on the patient's blood serum, which is the serum ordinarily employed in the Wassermann reaction.

Within the past year, Klauder and Kolmer¹ have reported studies on the Wassermann reaction carried out on exudates, transudates, breast milk, etc. To demonstrate a local as well as a hematogenous origin of the specific complement-fixing antibodies in syphilis, these workers performed the standard Wassermann reaction in several cases on the surface serum of primary chancres. In their own words, "these tests yielded almost uniformly a four plus reaction. In some instances, positive results were obtained before the test appeared positive in the blood, which excludes the possibility of the positive reaction in the chancre fluid being due to the admixed blood." Since the completion of our present study, Klauder and Kolmer² have published their results on the "local" Wassermann in fourteen cases, and have elaborated the suggestion contained in their first paper of the practical value of the "local" Wassermann as an aid in the early diagnosis of primary syphilis. We have already reported a series of thirty-six cases.³ These findings will be discussed below in comparison with those obtained in the present series of cases.

MATERIAL AND METHODS OF PRESENT STUDY

Material.—Most of the cases in our series were referred for study through the courtesy of the members of the Department of Dermatology and Syphilis of the Medical School. The usual clinical data, including the time from exposure to the appearance of the lesion, the duration of the chancre, the presence of satellite or general adenopathy, the occurrence of secondary skin manifestations, the blood Wassermann and the dark-field findings, were obtained in all cases. Except in two cases, in which the subsequent occurrence of unquestionable secondary eruptions and a positive blood Wassermann made the diagnosis certain, the finding of *Spirocheta pallida* was taken as the only positive diag-

nostic criterion of primary syphilis. The negative cases were all followed both clinically and through blood Wassermann reactions until there was no doubt of the non-specific nature of the lesions.

Technique.—Ordinarily, sufficient serum for the reaction exudes from the surface of the lesion without difficulty. The surface is sponged off with normal saline, after which it is gently dried and squeezed. The surface serum is collected by capillary suction in a fine glass tube to the 0.1 c.c. mark. If necessary, the surface may be lightly scratched with the end of the tube, since a little blood does not interfere with the reaction. From one- to two-tenths of a c.c. is usually obtainable. One-tenth c.c. was employed in all cases, with further dilutions of one to eight, one to sixteen, and one to twenty-four where possible. The routine Wassermann reaction of the Venereal Disease Division of the State Board of Health, the standard anti-sheep cell, hemolytic system, using a single non-cholesterinized alcoholic extract of human heart for antigen, was carried out in all cases.

RESULTS

Our present series includes forty-three cases of demonstrated primary syphilis, and five cases of demonstrated non-leucic lesions as negative controls. For convenience, the cases are divided into five groups, according to blood Wassermann findings, the dark field findings, and the "local" Wassermann findings, as follows: Group 1, twelve cases with positive blood Wassermann reactions, positive dark fields and positive "local" Wassermann reactions; Group 2, one case with positive blood Wassermann, negative dark field and positive "local" Wassermann reaction; Group 3, twenty-nine cases with negative blood reactions, positive dark fields and positive "local" Wassermann reactions; Group 4, one case with a negative blood reaction, a negative dark field, but a positive "local" Wassermann reaction; and Group 5, five non-syphilitic cases, with negative blood Wassermanns, negative dark fields and negative "local" Wassermann reactions. (Tables I and II.)

The value of the "local" Wassermann is perhaps most clearly illustrated by a comparison of the results obtained with it in these forty-three demonstrated cases of primary chancre with the results of the blood Wassermann and the dark field, the two other positive diagnostic criteria of primary syphilis. (Table III.) Out of forty-three cases, the

CLINICAL DATA							LABORATORY DATA				
		PRIMARY LESION									
		Duration	Exposure	Adeno-	Secon.	Blood		Wasser-	On	Wasser-	On
Case	Location	Days	Days	pathy	Lesions	Wass.	Field	0.1 c.c.	0.0125 c.c.	0.00625 c.c.	0.004 c.c.
T. O.	Corona	21	27	Inguinal	None	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.
H. C.	Lip	21		None		Pos.	Pos.	Pos.	Neg.	Neg.	
W. S.	Corona	30		Inguinal	None	Pos.	Pos.	Pos.	Pos.	Pos.	Neg.
R. G.	Corona		33	Inguinal	None	Pos.	Pos.	Pos.	Pos.	Pos.	
H. L.	Corona	32		General	Papular	Pos.	Pos.	Pos.	Pos.	Pos.	
M. B.	Corona	46	25	Inguinal	Macular	Pos.	Pos.	Pos.	Pos.	Pos.	Weak Pos.
M. J.	Lip	18		General	Macular	Pos.	Pos.	Pos.	Neg.	Neg.	Neg.
B. G.	Corona	20		Inguinal	Macular	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.
J. S.	Corona	65	28	Inguinal	None	Pos.	Pos.	Pos.	Pos.	Pos.	Neg.
M. T.	Corona	21	28	Inguinal	None	Pos.	Pos.	Pos.	Weak Pos.	Pos.	Weak Pos.
J. H.	Scrotum	21		Inguinal	None	Pos.	Pos.	Pos.			
G. G.	Lip	14		General	None	Pos.	Pos.	Pos.	Pos.	Pos.	Neg.
H. R.	Genitalia	19	28	Inguinal	None	Pos.	Neg.	Pos.			
B. B.	Corona	21	28	Inguinal	None	Neg.	Pos.	Pos.	Pos.	Pos.	Weak Pos.
J. S.	Corona	10	28	Inguinal	None	Neg.	Pos.	Pos.	Pos.	Pos.	Neg.
W. F.	Corona	14	24	Inguinal	None	Neg.	Pos.	Pos.	Weak Pos.	Weak Pos.	
F. S.	Corona	24	25	Inguinal	None	Neg.	Pos.	Pos.	Pos.	Pos.	Neg.
G. J.	Corona	14	28	Inguinal	None	Neg.	Pos.	Pos.	Weak Pos.	Weak Pos.	Neg.
B. H.	Corona	10	24	Inguinal	None	Neg.	Pos.	Pos.	Pos.	Pos.	Neg.
R. G.	Genitalia			General	None	Neg.	Pos.	Pos.	Pos.	Pos.	
E. J.	Corona	7		None	None	Neg.	Pos.	Pos.	Pos.	Pos.	Neg.
I. J.	Corona	10	21	Inguinal	None	Neg.	Pos.	Pos.	Pos.	Pos.	Neg.
V. J.	Lip	7		General	None	Neg.	Pos.	Pos.	Weak Pos.	Weak Pos.	Neg.
M. D.	Lip	52		Inguinal	Macular	Neg.	Pos.	Pos.	Neg.	Neg.	Neg.
T. M.	Corona	14	24	Inguinal	None	Neg.	Pos.	Pos.	Pos.	Pos.	Neg.
H. L.	Corona	6		Inguinal	None	Neg.	Pos.	Pos.	Neg.	Neg.	Neg.
H. C.	Lip	8		Inguinal	None	Neg.	Pos.	Pos.	Neg.	Pos.	Weak Pos.
S. A.	Corona	3	28	Inguinal	None	Neg.	Pos.	Pos.	Neg.	Neg.	Neg.
B. W.	Corona	10	21	Inguinal	None	Neg.	Pos.	Pos.	Neg.	Neg.	Neg.
M. C.	Lip	4		Cervical	None	Neg.	Pos.	Pos.	Neg.	Neg.	Neg.
H. S.	Corona	17	28	Inguinal	None	Neg.	Pos.	Pos.	Neg.	Pos.	Neg.
B. C.	Corona	4	28	Inguinal	None	Neg.	Pos.	Pos.	Weak Pos.	Weak Pos.	Neg.
F. L.	Corona	7	23	Inguinal	None	Neg.	Pos.	Pos.	Neg.	Pos.	Neg.
H. V.	Genitalia	7	28	None	None	Neg.	Pos.	Pos.	Neg.	Weak Pos.	Neg.
J. Y.	Corona	4	28	Inguinal	None	Neg.	Pos.	Pos.	Neg.	Neg.	Neg.
A. T.	Lip	5	21	None	None	Neg.	Pos.	Pos.	Neg.	Neg.	Neg.
M. L.	Scrotum	7	28	Inguinal	None	Neg.	Pos.	Pos.			
W. P.	Corona	3	Frequent	None	None	Neg.	Pos.	Pos.			
X. Y.	Corona	7	21-28	None	None	Neg.	Pos.	Pos.			
Y. Z.	Corona	15	28	Inguinal	None	Neg.	Pos.	Pos.			
T. M.	Corona	14	Frequent	None	None	Neg.	Pos.	Pos.			
O. L.	Corona	7	28-35	None	None	Neg.	Pos.	Pos.			
A. S.	Corona	21	28	None	None	Neg.		Pos.	Patient disappeared, refusing treatment. Came back 9 weeks later with secondary florid syphilis.		
X. Z.	Genitalia	few	8	None	None	Neg.	Neg.	Neg.			
J. Y.	Genitalia	21		None	None	Neg.	Neg.	Neg.			
G. H.	Genitalia	10		None	None	Neg.	Neg.	Neg.			
V. B.	Genitalia	10	10	None	None	Neg.	Neg.	Neg.	Ten weeks after healing of lesion blood Wassermann negative.		
H. J.	Genitalia	10	10	None	None	Neg.	Neg.	Neg.			
									Nine weeks later blood Wassermann negative; no symptoms of lues.		

TABLE II

SUMMARY OF RESULTS

Laboratory Findings: 48 Cases of Suspected Chancre

Group	Blood				Local		No. of Cases
	Wassermann		Dark Field		Wassermann		
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	
I.....	12		12		12		12
II.....	1			1	1		1
III.....		29	29		29		29
IV.....		1		1	1		1
V.....		5		5		5	5
Totals	13	35	41	7	43	5	48

TABLE III

Comparative Results in Diagnostic Methods: 43 Cases of

Primary Chancre

	Correct		Incorrect	
Blood Wassermann				
Positive	13	30.2%	30	69.8%
Dark Field				
Positive	41	95.3%	2	4.7%
Local Wassermann				
Positive	43	100.0%	0	0

blood Wassermann was positive in only thirteen cases, or 30.2 per cent, and negative in thirty cases, or 69.8 per cent. The dark field was positive in all but two cases or 95.3 per cent, and negative in only two cases, or 4.7 per cent. The "local" Wassermann was positive in all cases, or 100 per cent, not only in the cases with positive dark fields, but also in the two cases with negative dark fields, whose subsequent course showed them to be primary syphilis. These results are comparable to those of Klauder and Kolmer, who found five cases with both positive dark fields and positive local Wassermann reactions in twelve cases with negative blood Wassermanns.

Effect of local treatment.—The effect of local treatment upon the finding of spirochetes under the dark field is illustrated by the results recently reported by Driver.⁴ In a series of 171 cases on which diagnosis of primary chancre was made, ninety-eight, or 57 per cent, had positive dark fields. Of these 171 cases, eighty cases gave no history of local treatment, with 81 per cent positive dark fields, while eighty-one, which had been treated locally, gave only twenty-six, or 28.5 per cent, positive dark fields. Treatment of the chancre locally with an anti-spirocheticide apparently does not influence the "local" Wassermann, as illustrated by

the case of B. H., where the chancre had been treated with iodoform, but in which, nevertheless, the surface serum still gave a positive Wassermann. In this case the dark field also showed spirochetes, but Klauder and Kolmer report a case in which the "local" Wassermann was positive after the chancre had been treated with an anti-spirocheticide, and the dark field was negative. In this type of case the "local" Wassermann would be the only certain diagnostic finding. Fuentes⁵ reports a similar case, treated with peroxide and phenol, in which the spirochetes were absent but the Wassermann reaction on the chancre serum was positive.

Cases.—Two of our cases are of particular interest in this connection. H. R. presented himself with a history of exposure twenty-eight days previously with a genital lesion of nineteen days' duration, and inguinal adenopathy. No spirochetes were found in the dark field after careful search, but both the blood Wassermann and the Wassermann done on the surface serum of the chancre were positive. Each positive reaction substantiated the other, making a positive diagnosis where either reaction alone would not have been certain. In another patient, A. S., with a history of exposure about four weeks previously, and a lesion on the corona for about three weeks, but without adenopathy, the blood Wassermann was negative and no spirochetes could be found after careful search. The "local" Wassermann, however, was positive. Because of the negative dark field and blood Wassermann, the patient's physician advised him not to take treatment. He returned in nine weeks, with a florid secondary skin eruption and a positive blood reaction, demonstrating the correctness of the previous positive local reaction. Acceptance of a positive diagnosis when the local Wassermann was the only positive finding would have spared this patient a systemic invasion and a long, expensive course of anti-luetic treatment.

SUMMARY AND DISCUSSION

The "local" Wassermann reaction, carried out on the surface serum of suspected primary chancres, is a practicable and valuable aid to diagnosis. We do not in any sense suggest this procedure as a substitute for the dark field, which should be employed in all cases, and must remain the only absolute and unquestioned means of diagnosis. But in cases in which no dark field is available, in cases in which the dark field is negative, and particularly in cases

where local treatment with a spirocheticide has driven the organisms from the lesion, the "local" Wassermann should be employed. In such cases it is the only means of making a positive diagnosis at the time when such diagnosis is of most value. Taking into consideration the possibility of error in any series of Wassermann tests, even with the most careful technique, our results suggest that the "local" Wassermann reaction is positive in as high a percentage of cases of primary chancre as the dark field microscope. It is vastly more valuable than the blood Wassermann in the primary stage, not only because it gives a much higher percentage of positive diagnoses, but makes the diagnoses in the primary stage, when prompt treatment is simple and most efficacious. Obtaining the necessary serum from the surface of the chancre is not more difficult than obtaining the drop for dark field examination. In a later communication we hope to report on the practicability of using mailing tubes for sending very small amounts of serum to distant laboratories for the performance of the Wassermann reaction, as is now customary for the Widal test.

CONCLUSION

I. The "local" Wassermann reaction, carried out on the surface sera of chancres in forty-three cases of demonstrated primary syphilis was positive in all cases. It was negative on the sera from five proved non-luetic lesions.

II. Of these forty-three cases of primary chancre, the dark field was positive in forty-one, or 95.3 per cent, and the blood Wassermann in thirteen, or 30.2 per cent.

III. Treatment of the lesions with anti-spirocheticide, even when the spirochetes have disappeared, does not interfere with the reaction.

IV. In cases where no dark field is available, or where the dark field is negative, the "local" Wassermann reaction is the only method for making a positive diagnosis of primary chancre.

V. The "local" Wassermann is a simple and practicable diagnostic procedure in primary chancre, and the reliability of the results obtained is comparable to those obtained by the dark field microscope.

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DISCUSSION

DR. H. G. IRVINE, Minneapolis: There is not much that I can add. The paper is quite complete in findings and conclusions and I think the authors should be complimented on their work. It is a very important contribution to the laboratory work in the diagnosis of syphilis. They claim no originality for it. Kolmer practically stumbled on it in his routine examination of the body fluids. They did their work about the same time but Kolmer early published a few cases so his report precedes theirs.

There are a few points to emphasize. I think it is a fact that the laboratory findings are the most important single symptom of syphilis for the men in general practice. The man who is seeing a large number of cases of syphilis can piece together a great many points that go to make up the diagnosis, but for the man in general practice who does not see so many cases the Wassermann test is the best single symptom of syphilis which he has, if the test is properly carried out.

One point in particular which may be of use—and that is, taking juice from one of the lymph nodes. There are times when the chancre is treated in the very early stages and a delay of several days must occur before the dark field examination can be made. It must be remembered that an early diagnosis can be made by taking some juice from the gland itself and examining for spirochetæ.

It must also be remembered that the initial lesion is often a very small affair that heals quickly and cannot be diagnosed, and again lymph can be taken from the gland and a diagnosis made in this way in many instances. The possibility of making use of this procedure from the standpoint of the man out in the state who has not the proper equipment for making the dark field examination should be followed up. It will take a long time to do this, for there are not a large number of initial lesions running around. It has taken nearly a year for these men to collect this series and it should be worked over for a long time before men send in serum from a distance, but the State Laboratory should keep on with this and it is to be hoped that something will come out of it.

DR. PAUL O'LEARY, Rochester: Doctor Stern's paper is further evidence of the ability of the venereal division of the Minnesota State Board of Health to strike upon addi-

tional means of aiding the general practitioner to recognize acute syphilis. I fear we do not realize what a progressive and active organization the State Board is under Dr. Irvine's direction. It is one of the most, if not the most, active organizations of its kind in this country and one that we should be very proud of, and that we should use to our full advantage.

The paper impressed me as being important in that, first, one hundred per cent positive reactions were obtained on the primary lesions; and, secondly, that local treatment of the lesion apparently did not interfere with reaction in any way; and, thirdly, the effort made to make the collecting of the serum and the reporting of the test both easy and rapid. Particularly is this test of value when we realize that only thirty per cent of primary lesions will give a positive dark field, and that an additional fifty per cent will give a positive dark field on aspiration of the adjacent glands. The remainder of the cases heretofore have been compelled to wait for secondary symptoms or similar confirmatory evidence on which to make a diagnosis.

The use of the rubber band as a tourniquet applied above the lesion and allowed to remain on for about five minutes will in a great majority of instances cause an oozing of serum which can be readily collected. I believe that the use of such a device will obviate the difficulty of obtaining a specimen of serum.

The possible percentage of false positive reports obtained upon the fluid of these lesions will require further study. It probably will be very small when we realize the conservative technic used by the State Board laboratory and the fact that one hundred per cent positive reports have also been reported by Klauder and Kolmer in their original work on this subject.

DR. HENRY MICHELSON, Minneapolis: The work brought forth is of especial interest to the general practitioner, for it furnishes him a method of precision for making a diagnosis on a case presenting a penile lesion. I think the chief difficulty in the majority of instances is that the physi-

cian attempts to make the diagnosis too hurriedly. Most men seeing a penile lesion feel that the patient demands that something be done immediately. They therefore make the most accurate clinical diagnosis that they are able to make and if that diagnosis is against syphilis they apply some caustic which greatly changes the clinical aspect of the sore. A better procedure, when in doubt, is to apply a normal saline dressing and carefully observe the lesion from day to day. This allows one to leisurely make microscopic and serologic tests and, what is all-important, make an accurate clinical diagnosis.

The dark field is not safe equipment in the hands of a man who is not constantly looking for spirochetes. Smears should be used more often. The newer staining methods of Warthin make direct smears of real value. Another method which gives accurate, but not conclusive information, is excision of the lesion—placing the tissue in 10 per cent formalin solution and submitting to a dermatopathologist for sectioning and examination.

The local Wassermann is rather new. I see no reason why enough serum cannot be collected for sending to the laboratory—for one of the characteristics of a chancre is its ability to ooze freely. If then, it can be conclusively proven that the local Wassermann becomes positive earlier than the blood-serum Wassermann, then its value will be great, for the blood-serum Wassermann is not a great aid in the early diagnosis of penile lesions. The chancre appears about three weeks after infection, while the blood-serum Wassermann does not become positive before the thirty-fifth to forty-second day after infection. Therefore, valuable time may be lost waiting for a positive serum. The local exudation contains both an antigen and an amboceptor, which fact may throw some light on the source of the Wassermann.

DR. D. STERN, Minneapolis: Dr. Irvine called attention to doing a Wassermann test on the serum from the lymph nodes. This has been done and found uniformly positive, but we did not think it necessary to include it in the paper.

"We should study every field of therapeutics with our scientific methods and extract from each field the things that are serviceable and worth while. The only cure for the quack who now adds so much to the sum of human woe is to train our medical students to do their work so well and to get the medical profession to unite so thoroughly in their administration of prevention and relief that every member of our human society gets his share. We cannot afford to take care of only the very poor who appeal to our sympathies and of the well-to-do who can pay us well for our services. We must organize the medical services of our community so that all may be offered the advantages of modern medical science. We must remember that the sick man is a social unit. He needs help for himself physically and mentally and for his family. We must establish the proper relationship of the sick individual to the community and be the connecting link in this

relationship. Finances is only a small portion, although the most obvious one, of this relationship. We have the knowledge, we have the organization, we have the traditions of prevention and treatment. The problem is in our hands. I think that we can rely upon the medical students now in our medical schools if they are given the proper guidance. Their quality is excellent. I doubt if there is any better aggregation of brains in the country. The training required for the degree of Doctor of Medicine in a first class medical school today exceeds that for the degree of Doctor of Philosophy. These men and women are capable of meeting the problems along the lines suggested in the near future if we will lay the basis now."—Extract from address by Dr. Ray Lyman Wilbur, President-elect of the A. M. A., at annual meeting of the California State Medical Society, May 16, 1922.

THE RESULTS OBTAINED IN ELEPHANTIASIS
THROUGH THE KONDOLEON OPERATION*

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Section on Surgery

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Five years ago I presented a paper before this Society describing the Kondoleon operation for elephantiasis and reporting three cases in which operation was performed by this method. I have now operated on forty patients and wish to report the end results obtained.

Experience with this number of cases leads me to believe that the Kondoleon operation may be looked on as a definite means of controlling the progress of elephantiasis, although it is not always possible through it to restore the limb entirely to normal. Until this operation was suggested, little could be accomplished in treating elephantiasis and in the majority of patients the disease slowly progressed until the limb became tremendously enlarged and deformed.

Elephantiasis is probably caused by a streptococcic invasion of tissues, and usually develops in tissues in which there is lymphatic or venous obstruction. In many of our cases a history of such an obstruction has been obtained. Following the obstruction lymphedema usually develops, and after a lymph stasis is present in a limb infection in the tissues seems more probable. A history of definite infection through an open wound has been obtainable in a number of instances. In certain cases injury to the limb with probable phlebitis preceded the disease. In others no etiologic factor could be obtained.

All the patients operated on gave histories of lymphedema which preceded the elephantiasis. If lymphedema is allowed to exist without efforts to control it by means of bandaging, and so forth, the edema usually increases slowly and in certain cases, probably through infection, a tremendous increase in the fibrous tissue elements of the skin, subcutaneous tissue, aponeurosis and superficial lymphatics occurs until the condition gradually changes to one of elephantiasis.

Many patients with elephantiasis eventually develop recurring attacks of erysipelas and each of these attacks tends further to increase the difficulty in drainage, probably because of destruction of lymphatic vessels and increase of the fibrous tissue elements of the skin and subcutaneous tissue.

Elephantiasis involves only the superficial tissues, and even in advanced cases the tissues lying beneath the aponeurosis are normal. In 1912 Kondoleon, following ideas previously advanced by Lanz, Oppel and Rosenow, conceived the idea of treating elephantiasis by connecting the deep and superficial lymphatic systems by the removal of a large amount of aponeurosis. He also removed as much skin and superficial fat as could be removed and still allow closure of the skin edges. The deep aponeurosis separates the deep and superficial lymphatic circulations, and after it has been partially removed and the skin allowed to drop down on the muscles, new blood vessels and new lymphatics form. These new vessels connect the two circulations, and the deep circulation thus drains the stagnated lymph from the superficial one.

The operation is usually performed as follows: A long modified elliptic incision, which includes the skin to be sacrificed, is made on one side of the affected limb. On the outer aspect of one of the lower extremities this incision extends from the crest of the ilium to a point a little below the external malleolus of the fibula. Then, in order to facilitate a wide removal of the subcutaneous fat, the skin is reflected on each side of the incision for a distance of about 3.75 cm. (Fig. 1). The skin is retracted and underneath each of the edges of reflected skin a long incision is made through the edematous subcutaneous fat down to and including the aponeurosis. These incisions are made almost parallel with the original skin incision. Included between them is a quadrilateral piece of edematous fat and aponeurosis. At their upper ends the two incisions through the aponeurosis are connected by a transverse incision (Fig. 2). The tissues to be removed are now free except for the attachment of the aponeurosis to the underlying muscle. By traction on the tissues to be removed it is easy to dissect the aponeurosis from the muscle throughout the length of the entire limb and to remove in one long piece the skin, edematous fat and aponeurosis (Fig. 3). A number of vessels which tend to bleed profusely are encountered; these are

*Read before the Minnesota State Medical Association, Minneapolis, October, 1922.

controlled temporarily with forceps. After the tissues have been removed these forceps are taken off, and surprisingly few of the vessels will be found to need ligature. The wound is closed with interrupted silkworm gut sutures, without drainage. It is usually necessary to perform a similar operation on the opposite side of the limb. The incision for this second operation should extend from the extreme upper portion of the inner surface of the thigh down to a point a little below the internal malleolus of the tibia.

My experience in operating for this disease has brought out certain facts which should be borne in mind in attempting to obtain the best results. The

sible to obtain further improvement by a subsequent operation for the removal of diseased tissue and obstructed lymphatics. We have found that much is to be gained by the continued removal, if necessary, of thickened and deformed areas. The repeated incision of such areas eventually removes large amounts of diseased tissue and allows the formation of new blood vessels and lymphatics, which assist in draining the affected limb. Operations of this type were probably first recommended by Rogers of Milwaukee.

Considerable shock follows the operation in some patients, probably on account of extensive injury to sensory nerves and because of bleeding, and for

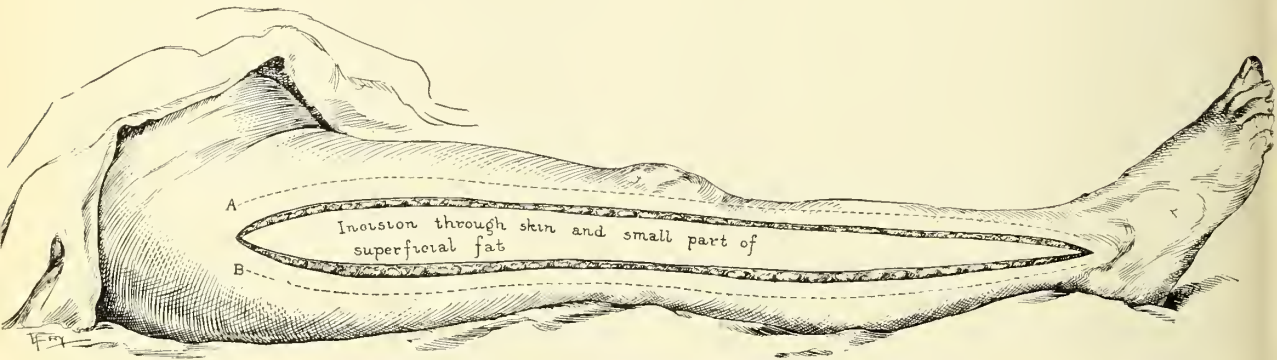


Figure 1. Incision used on the outer surface of the thigh and leg. Dotted lines A and B show extent to which the skin is reflected for the removal of subcutaneous fat.

ease with which the operation may be performed is increased if means are first taken to allow the edema to subside. If the patient is placed in bed with the limb elevated and firmly bandaged, and is kept in this position for ten days or more, the limb usually diminishes considerably in size and the tissues become softer. It is then easier to determine at operation the amount of skin which may be sacrificed and still permit satisfactory closure of the skin edges, and it also appears that the vascularity of the parts is diminished by such preoperative treatment. Many patients seek medical aid at a time when a low grade streptococcic infection is present in the tissues and it seems especially important in such cases that preoperative treatment of the type mentioned should be used until the redness and evidences of active inflammation in the tissues have subsided.

When patients do not obtain a satisfactory reduction of the limb by the first operation it is pos-

sible to obtain further improvement by a subsequent operation for the removal of diseased tissue and obstructed lymphatics. We have found that much is to be gained by the continued removal, if necessary, of thickened and deformed areas. The repeated incision of such areas eventually removes large amounts of diseased tissue and allows the formation of new blood vessels and lymphatics, which assist in draining the affected limb. Operations of this type were probably first recommended by Rogers of Milwaukee.

Considerable shock follows the operation in some patients, probably on account of extensive injury to sensory nerves and because of bleeding, and for this reason it seems wiser in extensive cases to perform the operation on one side of the limb only. The opposite side may be operated on ten or twelve days later. To diminish shock, patients are given $\frac{1}{6}$ grain morphin, before operation, and after operation are treated as in shock; the head is lowered, external heat is applied, and subcutaneous salt solution and repeated hypodermics of morphin are administered.

Patients should bandage the limb for an indefinite period following the operation. This usually controls the swelling, even when patients are up and around, whereas such a procedure before the operation would have failed to control the swelling. Should the limb swell too much in spite of the bandaging, the patient should be advised to stay in bed for periods of a week at a time, or longer, and during this time to keep the limb elevated and firmly bandaged. Such treatment usually diminishes the edema and, after this has disap-

peared, bandaging more effectively prevents further swelling.

Before operating it is advantageous to have a distinct understanding with patients regarding the prospects for cure. They should clearly understand that although the size of the limb will be diminished by the operation, a perfectly normal limb is not to be expected; that the operation is being done to control a disease which, if left untreated, will grow progressively worse, and that it will be necessary to keep the leg bandaged for an indefinite period following operation.

I have operated on several patients who have been unsuccessfully operated on by other surgeons, and in each instance a good result was obtained by the second operation (Figs. 4-9). The first operation failed probably because the surgeon had not observed the principles which I have outlined.

Several patients developed recurring attacks of erysipelas some time after operation. In such cases a streptococcic vaccine should be administered over a long period of time and any foci of infection which might be present should be eradicated.

Thirty of the forty patients operated on obtained good results. The remaining ten were improved. I believe that by means of further operative procedures a good result could be obtained in each of these.

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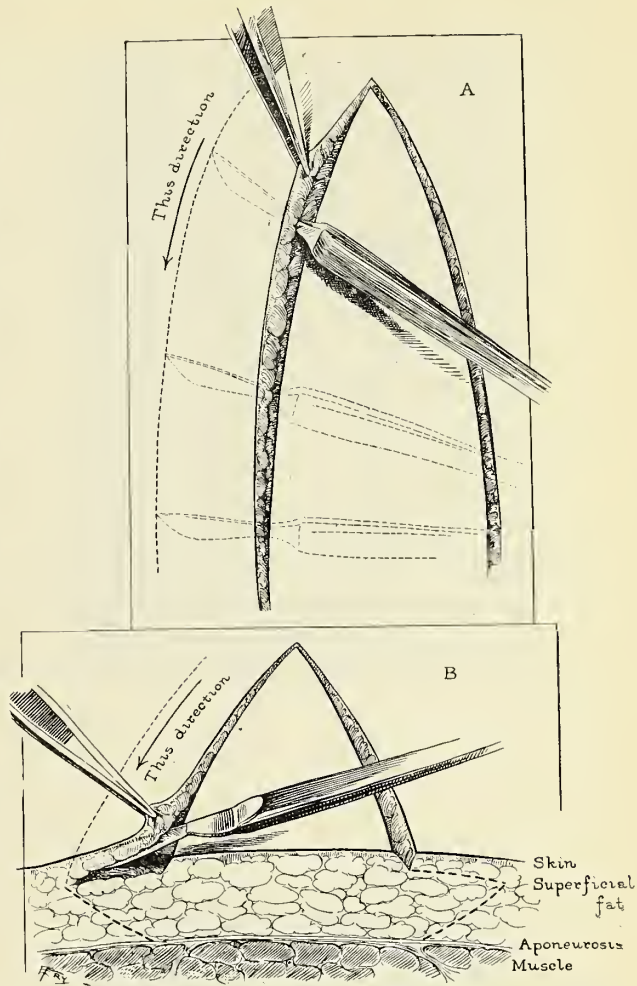


Figure 2. A, method used to facilitate the removal of a large amount of subcutaneous fat. After the incision has been made the skin and a small amount of fat are reflected in order that a larger amount of fat may be removed. B, cross-section of A.

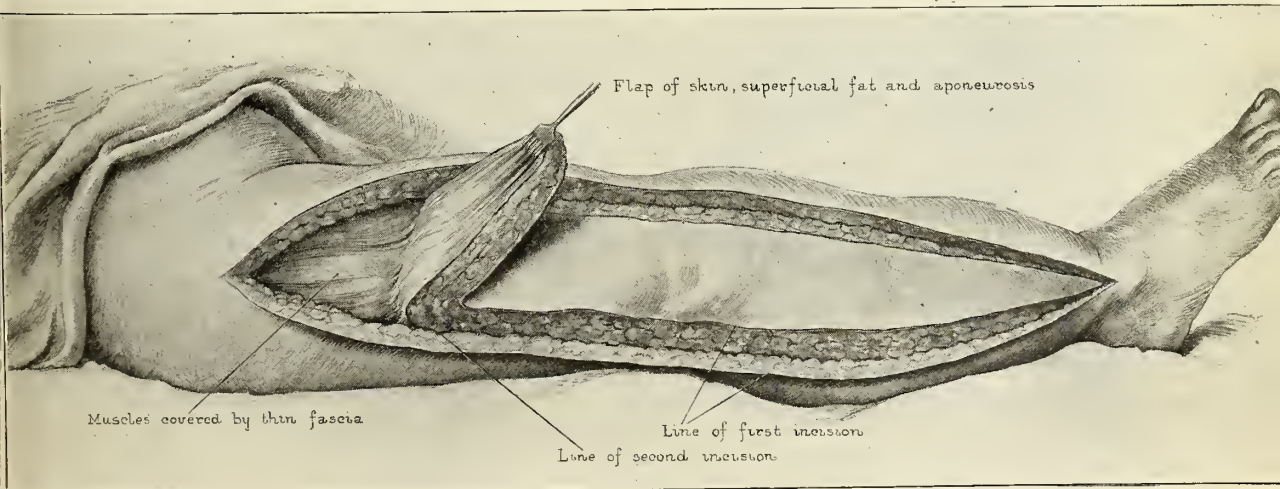


Figure 3. Skin, a large amount of subcutaneous fat, and aponeurosis removed in one piece.

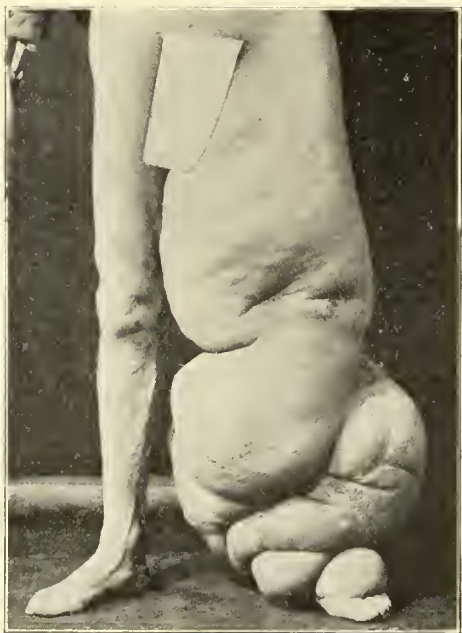


Figure 4. (Case A308040.) Anterior view of patient on admission to the Clinic, March 5, 1920.



Figure 5. Same as Figure 4, lateral view.



Figures 6 and 7. (Case A308040.) Following the third operation (June 11, 1921), the wound in the thigh, except for about 3 cm., healed by first intention. The areas near the ankle sloughed. July 14 the patient left the hospital with the wound in the thigh healed and the ankle in good condition.

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DISCUSSION

DR. ROBERT EMMETT FARR, Minneapolis: I would like to ask Dr. Sistrunk two or three questions based upon a small experience of my own in these cases. While he was speaking it occurred to me that if I could practice four hundred years longer I would have as many cases as he has had. I think certain forms of this disease are probably due to some sort of infection. Handley found a number of cases due to the staphylococcus aureus, and obtained good results from vaccines. That is one point I want to ask him about, namely, if he has obtained any evidence with regard to the etiology. In the second place, how much trouble has he had following operation, from pain in the limb especially down toward the foot. The cases I have seen complained bitterly after operation.

Another trouble we had, which was due to faulty technic, perhaps, was the separation of the skin from the muscle by the secretion of a large amount of fluid. In one case it was absolutely impossible to hold the skin in contact with the muscle. The spaces would fill up with edema, although we had her hanging practically with the limbs up in the air at an angle of forty-five degrees. After several weeks we aspirated a large amount of fluid from the pockets. She improved, and while the result was not good, it was fairly satisfactory.



Figure 8. (Case A41167.) Anterior views before operation and three months after operation.

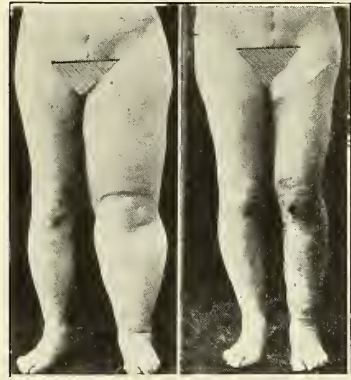


Figure 9. (Case A228071.) Anterior views before and after operation.

DR. W. E. SISTRUNK, Rochester (closing): With regard to the etiology of elephantiasis, it is generally thought, although it has not been definitely proved, that elephantiasis is produced by a chronic infection in the tissues. This infection, certainly in the majority of cases, occurs in tissues in which a lymphatic or venous obstruction is present. For a long time it was thought that elephantiasis was usually caused by filariasis, but now it is believed that filarial infections produce lymphatic obstruction and, following this obstruction, secondary infection occurs which produces the change in the tissues which we call elephantiasis.

When recurring attacks of erysipelas develop following the operation, patients are best treated by the repeated administration over long periods of time of a streptobacterin vaccine. In such cases every effort is made to prevent lymph stasis by bandaging the limb. With a lymph stasis patients seem more liable to harbor infections. For instance, in cancers of the vulva and penis, where the inguinal and femoral glands are thoroughly removed at operation, a lymph edema often develops. In many of these cases, probably on account of the lymph stasis, erysipelas will develop in a few months following the operation.

In none of the patients upon whom I have operated has a drainage of lymph from the wound following the operation been noticed. Perhaps this occurred in Doctor Farr's cases because he drained the wounds primarily. In all the patients upon whom I have operated, I have closed the wounds without drainage and after operation I have applied a firm bandage in order to try to rid the limb of any edema which was present.

I think Doctor Farr is correct in regard to the fact that we sometimes see pain in the ankle following operation. I have noticed this in some of my cases, but this pain usually disappears after six months or a year.

THE CAUSES, REPAIR, AND MANAGEMENT OF CASES OF POSTOPERATIVE HERNIA*

ARTHUR E. BENJAMIN, M. D.

Minneapolis

Hernia too frequently follows a laparotomy. Men who undertake surgical work and perform laparotomies should try to avoid this unfortunate result by every means possible.

Postoperative ventral hernia may be due to:

1. Incomplete preparation of the patient for a laparotomy.
2. Imperfect and incomplete closure of the peritoneal incision.
3. Non-identification and improper approximation of the supportive structures.
4. Destruction of the tissue from tying the sutures too tightly.
5. Employment of improper suture material for the various structures.
6. Careless and rough handling or traumatism which promotes adhesions, stasis, and possibly infection.
7. Excessive intra-abdominal tension.
 - A. Gastric dilatation.
 - B. Intestinal or colonic distension or ileus.
8. Persistent vomiting.
9. Lack of surgical cleanliness.
10. Retention of exudate or blood with infection in the region of the wound from incomplete drainage.
11. Unwisely chosen incision in the presence of infection.
12. Excessive or prolonged drainage in septic cases.

The preparation of the average patient for a laparotomy should consist in limiting the diet for a few days previous to the operation to foods that will easily digest. All the vital organs, including heart, kidneys, and lungs, should be in as nearly normal condition as possible and the gastrointestinal tract performing its function properly, with no undue distension of the stomach or intestines with gas or waste products. The administration of a mild laxative such as mineral oil for days or weeks in advance—in some cases—and the use of a digestive and intestinal antiseptic may be called

for occasionally. Where there has been stasis or toxemia from waste product retention, the colon should be flushed out daily.

Abscessed teeth or badly diseased tonsils had better be removed before a severe abdominal operation, and the mouth kept in a clean condition.

In performing a laparotomy, it is unnecessary to say that any undue traumatism should be discouraged. Traumatism or injury to the peritoneum or intra-abdominal organs invites adhesions and post-operative ileus with frequent distension and a strain of the suture line, which has occasionally resulted in postoperative hernia. The writer believes therefore that prolonged use of self-retaining abdominal retractors in an operation with a limited distribution of pressure as found in wire or narrow retractors is inadvisable. (For a similar reason a rubber dam to wall off the abdominal cavity is used instead of gauze.)

In closing the peritoneum, the writer has concluded that chromic catgut is better than plain catgut because the plain suture is occasionally absorbed too quickly, allowing the intestine or omentum to become adherent to the superimposed muscle or fascia and making it possible for hernia to occur. Continuous chromic catgut passed back and forth turning the raw edges of the peritoneum upward and outward is the usual manner of closure. (Fig. 1.) Where the peritoneum is thin on one side, it is caught from beneath and the posterior sheath of the rectus and the muscle included. The

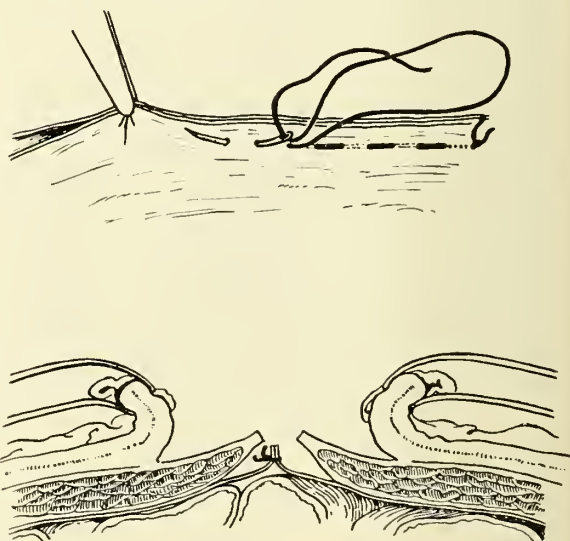


Fig. 1. (A) Stitching up peritoneum. (B) Cross section of peritoneum with edges turned outward (Doyen).

*Presented before the Annual Meeting of the Minnesota State Medical Association, Minneapolis, October, 1922.

opposite side is to be brought up to this point. Care should be taken in closing the peritoneum that no fat or omental tissue crowds through the suture line, and that none of these structures are caught by the suture. A spatula held just below the suture line in placing the peritoneal stitches assists in a more nearly perfect technique.

To use a very rapidly absorbable material for supportive structures such as the muscle and fascia, invites a separation of these structures in case there is much intra-abdominal tension. It is obviously necessary, therefore, to select a more permanent suture such as chromic catgut for the purpose of maintaining the support a sufficient length of time.

When sutures are drawn too tightly, there may be a strangulation of tissue and weakening of the wall, and in some instances infection results from an exudate which collects when the tissues are so irritated.

An overlapping of the wall may be indicated where the supportive structures are very thin and attenuated. The posterior sheath of the rectus is included with the stitch used to close the peritoneum. The abdominal muscles are included with a deep running stitch and the superficial turn includes the fascia, which makes a direct approximation of this structure. The structures should be positively identified and the fat layer dissected from the fascia unless a positive approximation is not interfered with by the fat layer, the inclusion of fat between the muscle or fascia may prevent union and cause a hernia.

The fat layer, when thick, is brought together with plain catgut and this area drained with a few split rubber tubes to carry off the exudate or blood that accumulates, thus avoiding in many instances the collection of a culture media which might aid in wound infection.

Any excessive intra-abdominal tension from prolonged gastric dilatation is dangerous. In many cases the stomach tube is used before the patient leaves the operating table and thereafter every two to six hours when there is nausea, vomiting, distress from dilatation or with rapid pulse from this cause.

The use of mineral oil following lavage is found well tolerated and is placed in the stomach through the tube; this facilitates the restoration of the normal function of the intestinal tract. The colon likewise should be kept empty so that the contents from above may more readily continue down the intestinal tract. When operating upon an abscess in the



Fig. 2. Shows the ventral hernia with thinned out walls.

abdominal cavity, the point of selection for the incision should be chosen wisely so that drainage will be perfect and there will be little or no destruction of muscle fibre, and, where possible, the abscess should be opened through a muscle splitting incision. The amount of drainage material should be limited and drainage facilitated soon after the operation, by turning the patient on the abdomen, so, by gravity, the drainage may be more perfect. It has been demonstrated time and again that this position gradually becomes more comfortable to the patient; the gases pass more readily, there is less interference from pus within the abdomen on account of this drainage, and in consequence diffuse peritonitis or bowel obstruction is less likely to develop. Drainage can be discontinued earlier and the cavity sterilized by Dakin's or other solutions. In some instances, bismuth paste can be placed in the cavity later. This all tends to a more rapid closure of the wound and with less possibility of hernia.

Postoperative Hernia.—Greater care should be exercised in the preparation of a case for operation on a postoperative ventral hernia than in the ordinary laparotomy. All the precautions mentioned for a primary laparotomy should be observed in the preparation and operation, and after-care of a case of ventral hernia. In addition, extra precautionary measures should be employed especially to prevent postoperative ileus, intra-abdominal tension or peritonitis; because many of these cases already have a great many adhesions of the omentum and bowel which require separation. The abdominal cavity is lessened in capacity and the portion lying within the hernial sac after the operation has to be confined to the limited space within the abdomen, which necessarily increases the angulation of in-

testine and the consequent intra-abdominal tension.

It is imperative in every case of large ventral hernia (Fig. 2) to put the patient to bed for a time until one is able to reduce the hernia and demonstrate that it can be contained within the abdomen before operation. When there are many adhesions to the hernial sac or ring, this may not be possible.

The function of the kidneys and action of the heart should be thoroughly analyzed and the chemistry and clotting time of the blood determined in exceptional cases in order to administer the necessary preoperative remedies. This tends to make operative procedures less hazardous, as the extent of the operation is very great and the risk correspondingly increased.

Many of these hernias may be operated upon with a local anesthetic, which is preferred by some surgeons. The author, however, believes that the combination of local, gas and ether anesthesia is fully as satisfactory in the average case, and the disturbance no greater and the convalescence is as satisfactory as a rule.

The incision is usually a longitudinal one, and is made in such a way as to remove the excessive skin and unnecessary fat layer. In some, the transverse incision is selected. The surgical work should be done rapidly, carefully, and gently, without unnecessary traumatism or pressure. There must be a positive identification and separation of the fascia from the superimposed fat. The peritoneum and abdominal muscles as well as fascia are left intact, and not separated. The weak or hernial portion of the wall is strengthened by lapping it over the opposite portion and the one side stitched beneath the opposite side in the manner illustrated (Fig. 3) usually with double chromic No. 1 suture, including all the layers. In this manner the cut edge of the fascia is turned up and outward, allowing no raw surface within the abdomen. Supplementary sutures of silkworm gut fasten the two walls firmly together by a mattress suture which passes through the fat and skin layer and tied over rolls of gauze. These are placed in sufficient numbers to firmly fix the two supportive layers together and to take the strain off the other suture lines. The edge of the upper flap is then stitched to the fascia of the lower flap in a firm manner (Fig. 4). The spaces above the fascia are drained with flat rubber tissue, allowing no exudate or blood to accumulate, which might impair the healing of the walls or result in a wound abscess.

It is necessary to limit the amount of raw surfaces within the abdomen so that when the intestines are closely confined there is no greater possibility for adhesions to occur and distension to arise, which would invite a failure in the operative work. By carefully covering all raw surfaces and perhaps the use of sterile vaseline on any doubtful areas and the engrafting of omental sections in others, minimizes this possibility.

All disabling adhesions which have been interfering with the normal function of the intestine should be separated at the same time, thus favoring intestinal peristalsis. When all these preliminary precautions are observed and care in operating is followed, it is seldom necessary to use a fascial transplant or McGavin's filigree to close the gap.

Gastric lavage is here more frequently performed while the patient is on the table than in the ordinary laparotomy, which lessens the possibility of postoperative vomiting and gastric distension. This is followed by other washings as indicated. A safe rule is to perform gastric lavage daily if there is abdominal distension. Pituitrin is occasionally resorted to when an enema is administered. Mineral oil is given quite freely and is usually well tolerat-

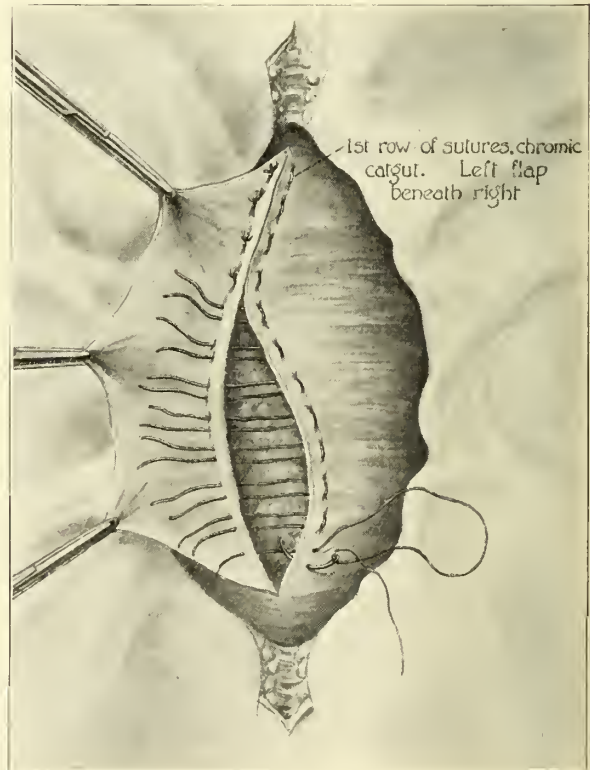


Fig. 3. Repair of postoperative hernia—first row.

ed. The position of the patient is changed every three or four hours, which assists in evacuating trapped areas of gas in the intestines. The foot and the head of the bed are alternately elevated and the patient changed from side to side. The patient is encouraged to assume the face position early after operation, which position is voluntarily taken later, when comfort and relief are experienced.

The diet is liquid and of limited amount. Very gradually one should feel his way in recommending food so that no disturbance or distension results from its administration.

The convalescent period is followed up with a gentle and gradually increasing number of exercises to give tone to the abdominal and other muscles. An abdominal support is recommended for some time.

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DISCUSSION

DR. EARLE R. HARE, Minneapolis: I have enjoyed this paper of Dr. Benjamin, and I wish to say that I can sub-

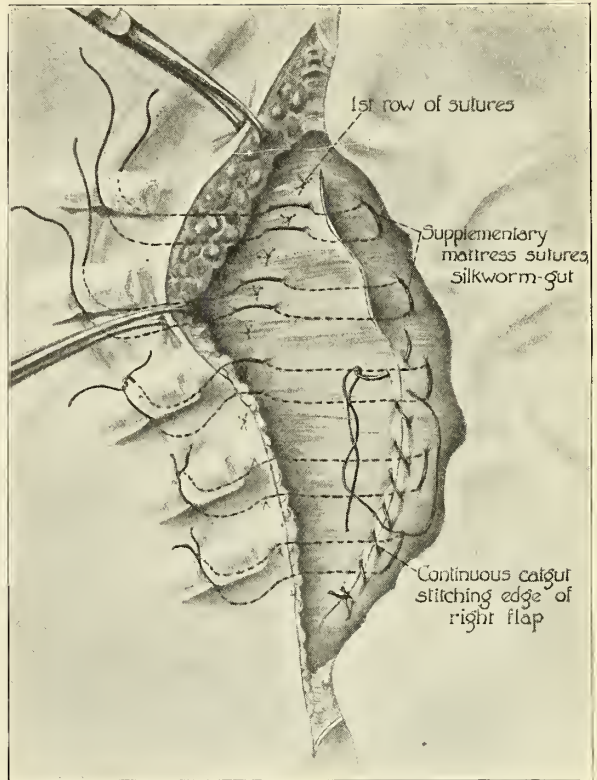


Fig. 4. Repair of postoperative hernia—second row tied over gauze.

scribe to practically everything he has said in the paper. I believe the best way to prevent a postoperative hernia is the proper closure of the abdominal wound. First, the proper selection of the right type of incision, and I believe that, as a rule, we pay entirely too little attention to the proper selection of the right type of incision, and by that I mean we should pay more attention to the anatomical structures involved when we make the incision by preserving as nearly as possible and by replacing them as nearly as possible in their normal relations after the operation; then we will to a great extent avoid the possibility of postoperative hernia.

Dr. Benjamin has addressed himself to a good many things as the cause of postoperative hernia, and among them incomplete closure of the peritoneum, which is a most important factor in the development of this hernia. Unless the edges of the peritoneum are accurately closed, unless there is absence of any interstices of any kind, the omentum by a little increase of the intra-abdominal pressure will be forced out between the layers of the peritoneum, and the beginning of a hernia is at once established.

He has spoken about the improper approximation of the supporting structures. I believe it is necessary in the closure of the abdomen in every instance to approximate accurately the corresponding structures on the two sides of the incision. In that respect I would disagree with Dr. Benjamin's conclusions in midline hernia where he overlaps the entire structure or thickness of the abdomen. I

believe that is, as a rule, not the best way because it is almost impossible to bring a thickened structure into sufficiently close apposition with the peritoneum to prevent these little interstices through which the omentum will crawl or through which some of the structure lying in the abdomen will force its way out, and thus begin a new hernia.

I have already intimated that I believe in the preservation of the structures. I believe it is highly important to prevent destruction of the nerve filaments in the muscles. If one nerve filament be destroyed, I believe collateral filaments will be established and the muscle tonicity will be maintained after the closure of the abdomen. If we destroy two or three or even four branches, as we do occasionally, not infrequently all the nerves of the muscles, in the rectus for instance, there will be no re-establishment of the collateral nerve supply, and there will be a lack of tonicity in the muscles which will allow of weakness of the abdominal wall following operation with the possibility of the development of postoperative hernia. Where there is pouching of the abdominal wall normally, there is greater likelihood of the development of hernia, and this will follow postoperative work. If we properly select the type of incision, if we are careful to maintain the anatomical structures, if we are very careful to reapproximate them after operation, if we avoid infection, we will have a minimum number of postoperative hernias developing, and I believe that the best way to cure a postoperative hernia is to prevent its development.

DR. ARNOLD SCHWYZER, St. Paul, Minn.: There is one point I wish to make in regard to large hernias, especially above the navel, where there is much eventration, where there is a great deal of tension. This point is that it is important to operate, if possible, under local anesthesia. I have operated on quite a number of these cases and have been impressed with the importance of doing the work under local anesthesia. First of all, the operation is long, and second, you often have the feeling that the wound will not stand severe vomiting after suturing.

There is one subject that has not been touched on, and that is, how do we operate in a case of hernia due to an infection in the wound? These are the most frequent cases. If we operate too soon, say two or three months afterward, we have enough infection in the tissues to cause a mishap, and especially if we rely on the use of catgut alone. (Dr. Schwyzer then demonstrated on the blackboard his method of dealing with postoperative hernia.) Lateral double-looped silkworm sutures are here of good use especially in fat persons. They give firm support and do not compress the skin and fat of the wound edges, thus avoiding possible necrosis.

DR. R. E. FARR, Minneapolis: I want to refer to one point in technic in relation to the closure of these large umbilical herniæ, where we want to make a lipectomy. Recently we have been using this technic: subdermal infiltration along the line of the upper incision, then making

an incision immediately following this subdermal injection, turning a layer down from above and exposing the fascia, and directly under the eye making a subfascial infiltration, going on with dissection, freeing the mass from above, and by that time we find we have anesthesia from below with fifty per cent less of the solution than we were formerly able to use.

The other point I want to discuss is the question of closing abdominal hernia in which the patient has had several operations in one region or sloughing in that region from prolonged drainage or what-not. In those cases, especially in the upper abdomen, we have devised and made use of the pedicle flap instead of a transplant of fascia. In some of these cases the opening is as large as your hand, with no peritoneum, not a single thing with which to close the defect. We lift up the skin of the chest wall in those cases, make a rectangular flap with base below, taking a good deal of the intercostal muscle with it, and the edges of the flap will be bleeding when we sew it into place, showing that it has good circulation. We may turn the flap in that direction or take a flap diagonally and turn it across diagonally from either or from both sides. In many instances we may make a rectangular pedicle flap and have the circulation intact, and thus do not place upon our flap as great a handicap as when we make the transplant. We know an entirely separate fascial transplant which will grow under perfect conditions, but the margin of error is greater than in the method I suggest.

DR. A. E. BENJAMIN, Minneapolis (closing): In regard to Dr. Hare's suggestion that we do not stitch these flaps together and should separate them, I would agree with him in most instances, but there are cases where we have multiple hernia and where the flap is so thin we cannot very well identify the tissues, and in such cases especially we should do overlapping. In all primary laparotomies identical tissue should be sewed together unless it is very thin and we have to strengthen the wall.

I believe, in operating, nerve fibers should be avoided as much as possible because we will get a hernia where they are greatly injured.

Dr. Farr mentioned hernia followed infection. I have mentioned that in my paper, but did not read it. This suture, which he has illustrated, is something similar to that I used years ago and in which I would include fascia, muscle and skin, in a figure 8, but in closing, I was not always sure the fascia was properly approximated. I would not be certain that I might not have in between the fascia some fat or tissue which would prevent healing. So I gave it up and used a separate suture for that layer. Placing the sutures on one side, in this way, you can drain the fat layer, which has the same effect as the suture I have used before. You can leave the fat layer open and drain the space freely.

Local anesthesia we have used in nearly all of these cases in the first part of the operation, but gas or ether when we are separating badly adherent or scar tissues.

CHRONIC INTESTINAL INDIGESTION IN EARLY CHILDHOOD*

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Chronic intestinal indigestion occurs frequently in early childhood. The writer has notes on forty-three cases seen in the last three years. It is on this material that he has based the present paper. The cardinal symptom is the passage of excessive amounts of fecal material. The causes are: (1) retarded development of the digestive system; (2) infections outside the alimentary tract; (3) malfeeding.

Let us consider these three causes in more detail. We consider that retarded development of the digestive system is present when in otherwise normal babies the administration of cereals and vegetables, beginning at the age of seven months, is followed by symptoms of indigestion. A chronic indigestion occurs in these exceptional children when they are fed according to the usual rule and not according to their digestive ability. The infections which most frequently impair the child's digestive power are those of the pharynx and middle ear. An acute diarrhea due to parenteral infection of this sort may be the precursor of the indigestion, or the infection may be of a more chronic type,—chronic otitis media, chronically infected adenoids, chronic suppurative non-tuberculous adenitis; all these have shown themselves in causative connection with chronic indigestion. As regards the third cause, malfeeding, the range of foods which the normal child can digest is so great that malfeeding alone seldom serves as a principal factor.

Chronic intestinal indigestion exists in two types. In the first there is an intolerance for carbohydrate. Diarrhea occurs when cellulose or starch or sugar approach their usual proportions in the diet. When these are omitted, the child improves. As a rule, this type is fairly mild.

In the second type, we find not only intolerance for carbohydrate, but also a markedly lowered tolerance for fat, gastric achlorhydria, defective hepatic function, muscular weakness and a disturbance of growth amounting in many cases to infantilism. This is the disorder originally described by

Gee as "celiac disease," and later rediscovered as the Infantilism of Herter. In this type the stools are characteristic, being voluminous and foul or rancid unless fat is altogether excluded from the dietary.

Diarrhea is the prominent symptom in both types. It is usually not profuse. The usual rule is for occasional attacks of severe diarrhea to supervene on a chronic daily basis of four or five mushy or foul gray stools. In the history as first obtained there is often no statement as to diarrhea. This means only that the parents become accustomed to it and attach more importance to some secondary symptom, such, for example, as muscular weakness or delayed growth.

Before successful treatment can be instituted, it is necessary to exclude the other causes for chronic diarrhea at this age. These causes are as follows: chronic enterocolitis, tuberculosis, syphilis and intestinal parasites. In enterocolitis, the stools contain pus. This is not the case in chronic intestinal indigestion. Tuberculosis and syphilis can be diagnosed or excluded by the usual methods. Examination of the stools will make or exclude the diagnosis of intestinal parasites. Those which are most often productive of diarrhea are the ameba histolytica and the lamblia intestinalis.

Treatment must be considered under three heads:

1. The child needs rational discipline and control. His environment should be healthy and happy. He is fortunate if his mother be both intelligent and nervously stable, otherwise he must temporarily be treated in a hospital.
2. Complicating or causative infections must be cared for. The opening of a chronic otitic abscess, and the removal of infected adenoids have entirely relieved the indigestion in certain of my cases.
3. The diet must be suited to the child's capacity.

In the milder cases avoidance of excessive carbohydrate may suffice. In more severe cases it is necessary to limit the diet to milk, milk curd, lean meat, egg yolk and orange juice. In the type known as celiac disease, in which we have always found gastric achlorhydria and defective biliary secretion, it is theoretically indicated and practically necessary to give some form of acid in order to stimulate the secretions of the digestive glands discharging into the upper bowel. We have accomplished this by using soured milk, lactic acid milk. This must be skimmed, as these patients tolerate

*Presented before the Annual Meeting of the Minnesota State Medical Association in Minneapolis, October, 1922.

only minimal amounts of fat. They usually digest milk protein well, and we add to each quart of the skimmed sour milk the curd of from one to three quarts of skimmed milk. Their tolerance for carbohydrate is also much impaired. We have had our best results when we have made our carbohydrate addition in the shape of Blue Label Karo corn syrup. Of this we have been able to give an amount equal to from five to seven per cent of the skimmed lactic acid milk. On this mixture then of skimmed lactic acid milk, added skimmed milk curd, and five to seven per cent of Karo corn syrup plus orange juice, we have had good results in every case, getting good gains in weight, increases in height, cessation of diarrhea, and, what is perhaps most remarkable of all, we have continued this feeding in certain cases for over a year without the development of anemia. The amounts given have varied with the age of the child from 32 to 50 ounces per day. If the child's intestine has become distended and weak, the temporary use of an abdominal supporter and of liquid petrolatum are of definite service in guarding against retention of fecal accumulations.

In the severe types of chronic intestinal indigestion, treatment is sometimes necessary for two or three years. Relapses are prone to occur after periods of apparent complete recovery.

THE FUTURE OF MEDICINE*

J. C. JACOBS, M.D.
Willmar, Minnesota

Speaking of medicine in time past we, as a rule, meant only scientific medicine. Late years, however, the financial aspect of it has become one of its most important phases; in fact, at times it seems to be the most important one. A complication has risen in medicine in that a physician has to spend a large part of his time in other than scientific work. The practice of medicine may be considered from many angles, as now we have private practice, the specialist and the general practitioner, contract work, government practice, corporation work, social work, both charity and otherwise, free clinics and pay clinics. Modern practice of medicine is now

just as complex as our modern politics and the generally upset social situation.

With changing civilization and changing social conditions has come a change in the practice of medicine. The socialistic tendency has invaded the practice of medicine to the same extent as it has other activities. We are suffering now from the laws imposed on us by an hysterical majority, just as our ancestors did from the selfishly imposed will of medieval autocrats. Herbert Spencer says of those times, "there were scarcely any bounds to governmental interference; agriculture, manufactures, trades were regulated in detail, religious beliefs and observances were imposed, and rulers said to whom alone furs might be sold, silver used, books issued, pigeons kept, etc." Men fled from this despotism and dotted the whole eastern coast of North America with colonies. The despotic rule, however, followed them and finally they threw off all allegiance to the European rulers and created a free government where freemen were answerable to God alone. As Thomas Jefferson put it, "Next to God, the foundation or source of all authority is the citizen." In a few years, gentlemen, we have drifted back a thousand much as the historian Macaulay felt when he referred to the ideas of Gladstone, who favored the paternalistic government. He says: "Mr. Gladstone conceives that the duties of the government are paternal; a doctrine which we shall not believe till he can show us some government which loves its subjects as a father loves his child, and which is as superior in intelligence to its subjects as a father is to his child." Then he states what he considers impossible instances beyond which even a paternalistic state would not pass. We of this age know from experience that they are not impossible. He says: "Why should they not take away the child from its mother, select the nurse, regulate the school, overlook the playground, fix the hours of recreation and labor, prescribe what ballads shall be sung, what tunes shall be played, what books shall be read, what physic shall be swallowed? Why should they not choose our wives, limit our expenses, and stint us to certain number of dishes of meat, of glasses of wine, and cups of tea?" These are things of every-day occurrence now and we take them as a matter of fact in our free American government, while in the days of Macaulay he thought it impossible for even a paternalistic and autocratic government to so impose on the individual's liberties.

*Read before the Central Minnesota Medical Association at Willmar, December 14, 1922.

Our present autocracy is pictured by the Hon. A. O. Stanley, referring to our congress of a year ago, when he says: "Over 15,000 bills were introduced into our present congress, bills to fix the price and control the distribution of lumber and coal, to regulate the making and marketing of cloth and grain, to censor, supervise, stop, or cure baseball, horseracing, moving pictures, venereal diseases, and the social evil. Nobody escapes; everything in the moral, industrial, and commercial world is to be owned, operated, supervised, or censored, from the birth of a baby to the burial of a corpse, and the worst is not yet."

The desire to mind other people's business has become a disease. In the past ten years this government has spent over \$4,000,000,000 on commissions, special agents, bureaus, etc., to look after the business of social activities and individuals—in other words to keep a government agent at your elbow. This modern tendency to state ownership, state control, and state employment has invaded medicine to the extent that we are actually hampered in our work. You have to report to a bureau of non-medical clerks and ask their permission to give a dose of morphin to an advanced case of carcinoma, or a dose of brandy to an old woman at death's door with a lobar pneumonia. You will have to have a special permit to take a woman out of a filthy and unsanitary rooming house and confine her in a hospital. There are scores of hospital inspectors, each one on full pay, annually visiting hospitals, and each one looking after only one phase of hospital work. As a protection to the state they make you report a case of tuberculosis, but they do not care who annoys such a patient as a result of such report. Individual interests should not be thought of when the state has a program of its own. You deprive the venereal patient of treatment because he knows that the entire neighborhood will know he has syphilis if he goes to a doctor. Hence he goes on spreading the dread disease without attempted cure. And all those rules and regulations are mostly gotten up and enforced by men and women who sit in their comfortable offices, draw salaries from the state, and whose sole ambition seems to be to enlarge and make their department more efficient. And to think that perhaps a majority of these state-employed men and women are far from having taken any postgraduate work in medicine. The health of the community is entrusted largely to lay workers who have no knowledge of medicine.

We have state and county boards, county, city and school nurses, traveling state clinics, intrusted by the state with your own individual health. You are told how to live, what to eat, whether you are sick or well; what to do and where to go for your health. Patients are ushered in to our free clinics, to our state free hospitals, brought in by our nurses and supervisors, all to go in as state subjects to be taken care of by the state, for each state-employed man or woman must enlarge his or her department and make it more efficient.

A superficial observation, even, shows that medicine, with the rest of our social fabric, is fast becoming socialistic. Why should not a man be treated free by the state rather than to pay for the same himself? It is only the lack of space that makes it impossible for every tuberculous individual to get free treatment, board and lodging for one or two years as the case may require. How many diamonds are removed from the fingers before patients enter our own University Hospital? If the state supplies these things to some, why should it not supply them to the great majority, or to all if they ask for it? What is there to prevent the state from taking medicine over entirely? The socialistic tendencies of the times certainly invite it. People believe doctors' fees are always exorbitant, and, not comparing the work with medicine as it would have to be handled by the state, would jump at the chance. On the other hand, how many doctors would not be willing to work for the state on a salary with no expenses? The state in the last few years has paid \$3,000 to \$5,000 salaries for labor requiring less skill. We see government-owned industries coming—the crest on the wave of socialism. Shall we as medical men oppose it or fall in with the movement? I believe the maintenance of the community's health would cost more than at present, and, considering pull and politics, maybe the doctors as a class would net more than they do at the present time. But is it for the good of the individual in the community? Would he get the care he does now? Shall we as a profession fall in with the crowd and boost or shall we try to stem the tide and become unpopular?

Personally, I believe state medicine as great a mistake from the public's standpoint as would be state coal distributing stations or free public eating houses.

There is another matter which is, perhaps, of even greater importance to the future of medicine,

especially as viewed from the laity's standpoint. I refer to the hold that the quacks and irregulars are getting among the people. Some believe that this also is due to the socialistic tendencies of the times. I grant that there might be some relationship there, but do not think that this is the only cause nor the more important. I believe that the most potent cause for the people swarming to the offices of quacks is found within the medical profession itself. Medical ethics have taught for ages that the only proper thing for a physician to do is to crawl into his lair and be very careful not to display a sign or in any other way show people where to find him. In other words, we are taught that a sick person should hunt up the doctor, while the latter should keep himself out of the bright sunshine. These teachings have, no doubt, been very good in times past, but ethics, like everything else, change with the times. We have osteopathy, Swedish massage, schools of dietetics, chiropractic and other cults too numerous to mention, all spreading literature boosting their respective cures, and all attempting to bring into disrepute the scientific method of healing. The public hears all this at every turn, and never is there any educational literature sent them so they can get the real facts. Is it a wonder that people are deceived by this propaganda? I say again, is it a wonder, when nurses,

dentists, druggists, and even physicians are deceived? The common people are not to blame; we are to blame for not teaching them.

We have studied medicine and lived it for so long that we do not realize the general ignorance when it comes to the subjects of health and disease. Is it not time that we as a profession begin to educate the public for their own good? It would not take much to show them that the foundation of all quackery is very unstable. People are awake and crave knowledge; in fact, they are very anxious to know how to keep their health, and when lost how to regain it, and at present they are absorbing the only propaganda that is being broadcast all over the country. Don't we owe the public this, that we tell them the truth even though it should cost us some hard earned cash to educate them. We as medical men can make a living in some way even though the people all fell for quackery, but there is nothing under God's sun that can compensate for the harm done by irregular methods of healing.

These are only thoughts thrown out in the hope of setting some of you thinking, and in the hope that in this way some one may offer a solution for the evil. There is a chance here, both for county and state societies, and perhaps more of a chance for the individual physician than we have thought.

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EDITORIAL

Insulin and Diabetes

Ever since the epoch-making discovery of von Mehring and Minkowski that removal of the pancreas causes diabetes, it has been thought that the metabolic defect in diabetes was the deficiency of a hormone prepared by the pancreas. Yet, despite a few partial successes, all attempts to prepare pancreatic extracts which would promote the unequivocal utilization of sugar failed until recently, when Dr. F. G. Banting, in collaboration with Mr. C. H. Best, working in the laboratories of Professor Macleod, of the University of Toronto, obtained the active substance that they have named "Insulin." Their first product was secured by taking advantage of the well known fact that the acinous cells of the pancreas, which secrete the digestive enzymes, become completely degenerated in a few weeks after ligation of the pancreatic ducts, whereas those of the isles of Langerhans, which apparently secrete the antidiabetic hormone, remain more or less intact. The extraction of such degenerated pancreas yielded a material which exerted a striking influence on the blood sugar and the

glycosuria of depancreatized dogs, also greatly improving the subjective condition of such animals and markedly prolonging their lives. A similarly active extract was prepared from fetal pancreas in which the proteolytic enzymes were nearly absent, and with this material, effective control of the glycosuria and acidosis in a fourteen-year-old boy with severe diabetes was obtained.

Subsequent to this work, with the co-operation of Professor Macleod, Dr. Collip and others of the staff, methods were developed which permitted the preparation of potent extracts in quantity from the pancreatic tissues of adult slaughter-house animals. A source of abundant supply of the material thus became available.

A method of pharmacologic assay was developed, which depends on the effect of insulin on the blood sugar level of rabbits of standard weights and nutrition. The amount of material which will depress the blood sugar of these animals to 0.045 is considered as containing one unit of insulin. At this low blood sugar level, highly characteristic symptoms develop, consisting of violent convulsive seizures which may terminate in death, but can be controlled by the exhibition of small amounts of glucose. Similarly alarming symptoms occur when patients are given an overdose. This makes it imperative that insulin for clinical use should be of uniform potency, and is the reason for the careful control of the product that is now being exercised by the University of Toronto.

With the preliminary work accomplished, arrangements to expand production were made with the Connaught Antitoxin Laboratories of the University of Toronto and with a large pharmaceutical firm in the United States. Large scale methods of preparation were developed which have given supplies of insulin of reasonably standard and uniform potency, both when assayed by the rabbit test, and when tested therapeutically on diabetic patients. For clinical study, some of this material was allotted to a few physicians attached to hospitals with special facilities for conducting an impartial investigation of its value. These collaborators are reporting their experience collectively in a special number of The Journal of Metabolic Research, to appear shortly. A report of the splendid therapeutic results obtained in the first fifty cases treated in the University of Toronto was published recently. Daily injections of an adequate dosage of insulin, combined with a suitable adjustment of the diet, permits the assimilation of more carbo-

hydrate than previously, and enables the patient to gain in weight and in physical and mental vigor. It is too soon to decide whether the underlying diabetic condition is in any way improved by the rest which the exhibition of insulin may be supposed to give to the damaged pancreatic function, although there is some evidence that this is the case.

A great advance in the treatment of diabetes has been made and the investigators responsible have earned for themselves lasting distinction. They are to be congratulated for their wisdom in withholding a definite clinical announcement until they had adequate knowledge of the limitations, as well as of the clinical value, of the new treatment. The distribution of insulin may be limited temporarily to physicians who have had experience in accurate dietetic management of diabetes for the reason that such management must accompany the use of insulin if serious accidents are to be avoided. This would seem to be a wise provision.

R. M. W.

Epidemic Encephalitis

Although the literature has been teeming with articles on epidemic encephalitis during the past three years, an editorial in this issue of MINNESOTA MEDICINE is timely. An unusual increase of acute cases during the past month has been reported and the onset and course have been more virulent with a higher mortality rate than at any time during the past year. Whether this increase is seasonable or secondary to the mild wave of nasopharyngeal infections which are prevalent, one is unable to state.

A very incomplete survey of St. Paul and Minneapolis reveals that over eighty new cases have developed in the Twin Cities between January 15th and February 10th. Besides this there have been undoubtedly a large number of mild abortive cases which have not been recognized, in which the symptoms were transient. This does not include chronic cases or those who during the past three years suffered from an acute attack and are having an exacerbation of their former symptoms.

The most frequent symptomatology observed during this acute "flare-up" has been a brief history of a nasopharyngeal infection, usually a mild tonsillitis or coryza, followed in a few days with severe diffuse headache, a moderate temperature, some mental confusion, especially at night, and myoclonic twitchings of the extremities and abdominal muscles. Marked restlessness and in-

somnia has been encountered more frequently than lethargy. Of the first twenty cases observed by the writer, seven died; the average duration of the attack being twelve days.

In an attempt to ascertain the number of cases which had occurred in Minnesota from 1919 to the fall of 1921, the writer sent out two hundred letters to various clinics and medical men throughout Minnesota. One hundred and nineteen replies were received, giving a total of 518 cases with a mortality rate of approximately 17 per cent. Undoubtedly, some of these were duplicates; on the other hand a certain number were either not recognized or the medical man did not deem it worth while to reply. However, judging from this inaccurate and incomplete survey and from the prevalence of this disease since then (fall of 1921) one could conservatively estimate that over 1,000 cases have occurred in Minnesota since 1919.

It is of interest to note that bizarre and confusing as the symptomatology has been, because of the diffuse and generalized inflammatory involvement of the brain and spinal cord, definite symptom groups predominated at certain periods. During the fall of 1919 and the greater part of 1920, a gradual onset with lethargy were the outstanding features. During the winter of 1920 and the early spring of 1921, cases with a very acute onset with a high temperature, an undue amount of pain in the extremities due to meningeal irritation with some headache and mental confusion were quite frequent. Since then, rather mild but progressive cases were observed until January, 1923. At present the most frequent symptom complex is the acute onset, mental confusion and the myoclonic twitchings. Furthermore, the very slight abnormalities in the spinal fluid are entirely out of proportion to the marked and extensive inflammatory changes in the central nervous system.

The prognosis in these cases as to ultimate recovery is quite unfavorable, as many of them have permanent manifestations.

E. M. H.

The Cause of Influenza

The headlines which appeared in the newspapers all over the country heralding the discovery of the causative agent of influenza is an example of the desire on the part of the newspapers to produce a sensation. In this instance, however, the newspapers are not alone open to criticism for announcing as fact certain scientific investigations which

to every conservative physician require further experimentation for confirmation.

The announcement which caused such a flurry is simply a recapitulation by Dr. Simon Flexner of the results of investigations which have been carried on the past three years by Drs. Olitsky and Gates of the Rockefeller Institute and which have been published in the *Journal of Experimental Medicine*. The results of these investigations, which are more or less familiar to physicians, which may or may not be confirmed by other investigators, must be taken with some reservations. The announcement in this instance was broadcast over the radio by Dr. Flexner, himself, and we are rather surprised at this apparent departure from the usual care shown by the Institute in such matters.

It is well, however, that attention has been directed to this investigation of the cause of influenza which has been carried on for the past three years. The discovery of a minute bacterium christened the *Bacterium pneumosintes* present during the first thirty-six hours of a grip infection, not present in healthy individuals and capable of cultivation on artificial media and producing grip-like symptoms in rabbit inoculation is quite suggestive to say the least. When injected intratracheally this bacterium produces certain lung changes, which the discoverers believe lower the lung's resistance, making it more susceptible to secondary infection from streptococcus or pneumococcus regularly found in the respiratory tracts of human beings. Such an organism as the one described conforms to our ideas of what the etiological factor should be. The well known leucopenia and comparatively slight rise in pulse rate during a grip infection indicate that in this infection there is some peculiar lack of the usual defensive response on the part of the attacked individual.

The often expressed belief that the influenza epidemic reaching its crisis in 1918 was a different disease entity from the common yearly grip infection does not seem warranted. The exact reason for the increase in virulence of this disease as an epidemic increases is not satisfactorily explained but applies to other diseases such as smallpox and scarlet fever.

The medical profession awaits with considerable interest further reports regarding the *Bacterium pneumosintes* for with the discovery of the etiological factor of grip the possibility of control of this periodically devastating disease presents itself.

Child Health Day

Child Welfare is of vast importance to the community as well as to the individual. Any effort which has for its purpose the improvement of the child's health should receive the endorsement of the medical profession.

The Child Health Day program to be held in March in St. Paul is the second to be put on in this city. Last year a number of well known people addressed the parents and teachers. This year speakers equally prominent in child welfare work have been invited. It is interesting to note that our profession, represented by the Committee on Public Health of the Ramsey County Medical Association, have conferred with those in charge of the program in an advisory capacity. They have given their endorsement, and have seconded the invitation, to the speakers. Such co-operation (on the part of the medical profession) in the public health program should be valuable to all concerned.

The layman has a right to look to the medical man for guidance in health matters and it is by accepting the responsibility the doctors may expect to get reliable information before the public.

Legislative Activities

The medical profession is very definitely divided on the question of what its attitude should be regarding legislative matters. Some consider it highly undignified to dabble in politics and maintain that legislation concerns legislators and is none of its business. Others hold that in our representative form of government, where legislation is transacted by representatives for the most part untrained, it is the duty of the various elements of the body politic to interest themselves in legislation for the common good.

The attempt two years ago of the osteopathic profession to pass a bill entitling them to practice major surgery aroused the medical profession to action. They saw the danger that all the good that had been accomplished within our profession itself towards the regulation of the practice of surgery would be undone by such legislation. This bill was thus the immediate cause for the arousing of legislative interest among medical men. The mushroomlike growth of chiropractic, however, which is foisting upon the public a raft of half-educated "docs," is a far greater menace to the public. And why? Because chiropractic is based

upon the mere assumption that disease is caused by spinal nerve impingement. This assumption has never been proven and ignores the facts of the existence of bacteria and contagion and should be branded as absolutely false. We venture to predict that chiropractic will be handed down in history as the second great American fraud, the first being that of patent medicines.

Early in February the legislature turned down most emphatically the bill for the establishment of a common examining board in basic medical sciences, a bill drawn up by the State Medical Association, the prime purpose of which was to prevent in the future the licensing of half-prepared osteopaths and chiropractors. As first drawn up the bill provoked opposition from osteopaths, chiropractors, dentists, optometrists, chiropodists and others. At the public hearing of the bill as finally drawn up, the main opposition, however, was offered by the chiropractors. It is to be assumed, therefore, that the osteopaths felt that their constituents are well enough prepared in the basic sciences (anatomy, physiology and pathology) to meet such an examination. The inference is that the chiropractors cannot pass the examination, which only confirms the opinion that promoted the introduction of the bill.

What is to be the future course of the profession regarding this particular bill? This much can be said. The poor showing was doubtless in large part due to the widespread opposition apparent early in the legislative history of the bill. Many a bill has required more than one session to be enacted law. The medical profession has taken a stand on this question, its purpose is right and this bill should be submitted again in the next legislature.

THE OSTEOPATHIC BILL

Superficial perusal of this bill discloses nothing alarming. One is struck by the provision in it authorizing osteopaths to administer "anesthetics, narcotics, antidotes and the use of antiseptics"—this for drugless healers.

On closer scrutiny, however, it becomes clearly evident that if enacted this bill would throw the door of medical and surgical practice wide open to osteopaths, both to those to be licensed in the future and those at present practicing, who have not had any training in the use of drugs or the practice of surgery.

We quote the following paragraph from the pro-

posed bill, a careful reading of which will make this clear:

"Osteopathic physicians, when duly licensed, shall have the same rights and powers and shall be subject to the same duties as other physicians with reference to matters pertaining to the public health; including the reporting of births and deaths. Osteopathic physicians, when duly licensed, shall have the right to practice osteopathy as taught in reputable colleges of osteopathy, including the administration of anesthetics, narcotics and antidotes, and the use of antiseptics, subject, however, to the same restrictions and limitations as are by law applicable to physicians and surgeons licensed to practice medicine and surgery."

The first sentence above quoted gives osteopaths the same duties as physicians pertaining to the public health which might well entitle them to administer diphtheria antitoxin and to vaccinate, as such procedures are not drug administration. We see no reason why osteopaths, if entitled to escort human beings into and out of the world, should not certify to the fact. Confusion in terms employed in the compiling of vital statistics might well result. An error was made by the state originally in licensing any medical cults.

The second sentence quoted above is the most skillfully worded means of legislating all present and future osteopaths into full trained physicians and surgeons. According to this provision the institution of chairs of surgery and materia medica in reputable schools of osteopathy will be all that is necessary to grant osteopaths the right to practice the healing art under the same regulations now governing the medical and surgical profession.

Initiated as a drugless and knifeless method of healing and purporting to heal by osteopathy, which is generally interpreted as being a rubbing and kneading process, the osteopath sees that there is more to therapeutics than mere massage and desires to administer drugs and use the knife when indicated. Doubtless the rise of chiropractors who have utilized the nerve impingement fantasy and resorted to open advertising has done much to produce this change in point of view on the part of the osteopathic profession. If osteopaths wish to include drugs and surgery in their armamentarium, let them pass the examinations held by the state board of medical examiners in common with physicians and surgeons. It would be a simple matter for this state board to hold special examinations for candidates desiring to be known as osteopaths.

PSYCHOPATHIC BILL

In the December issue of MINNESOTA MEDICINE appeared an article by Dr. A. S. Hamilton on

"The Need of a Psychopathic Hospital at the University of Minnesota" and editorial comment was made on the subject. The bill providing for a State Psychopathic Hospital is at present writing before the State Legislature and the only opposition so far presented is from the standpoint of expense to the state. If our legislators could only see that a comparatively small initial expense of this kind would result in a great saving in the long run through the early diagnosis and treatment of mental and nervous disorders and thus prevent a great amount of expense to the state, the proposed hospital would become a reality. The benefit to accrue in the better training of physicians in the diagnosis and treatment of patients who will be cared for and the removal in many instances of the stigmata attached to individuals sent to asylums and jails should appeal to those having the bill under consideration. The statewide committee is anxious to have the medical profession throughout the state exert their influence on their respective representatives for this measure which is of such growing importance.

NURSES' BILL

The Minnesota State Nurses' Association has submitted a bill to the present legislature providing for a reorganization of the examining board for nurses and the registration of training schools, nurses and attendants. Without going into the details of the bill as finally drawn up it may be stated that the bill, if enacted, will tend to better standardize the activities of the nursing profession and we believe the bill a good one.

The original bill was so framed that all nursing must be performed by trained nurses or licensed attendants, the latter required to have eight months' hospital training. This feature of the bill aroused considerable opposition from the medical profession and rightly so, and has been eliminated. The establishment of an additional registry of nurses to be classed as licensed attendants (L. A.) provides for a much needed type of nurse with standardized training.

COMMUNICATIONS

Department of Health,
City of New York,
February 1, 1923.

Dear Dr. Drake:

In reply to your letter of January 25, I wish to give you the following facts in connection with the newer preparations of toxin-antitoxin that we have been using recently in New York City.

1. The new mixture of toxin-antitoxin contains only $\frac{1}{10}$ L+ instead of 3 L+ per c.c. The latter type of mixture we have used up to a few months ago. The $\frac{1}{10}$ L+ mixture is diluted 30 times as compared with the 3 L+ mixture. The *degree of underneutralization* is the same in both instances, the slight excess of free active toxin being equal in the two mixtures.

2. The $\frac{1}{10}$ L+ mixture produces much less local and constitutional disturbance than the 3 L+ mixture. In the latter mixture, it was the protein that caused most of the disturbance and this has been greatly diluted so that only 1/30 of the amount is used in each dose of the new mixture.

3. The $\frac{1}{10}$ L+ mixture does not seem to be as stable as the 3 L+ mixture.

4. As regards the efficiency of the $\frac{1}{10}$ L+ mixture, I can only say that I am about to retest a number of schools in which I used this mixture. I cannot, therefore, make any definite statement as to its efficacy. Such a mixture, however, was used on several hundred children last spring and when they were retested in the fall 85 per cent gave a negative Schick reaction. I shall know more about the efficacy of the $\frac{1}{10}$ L+ mixture in about six weeks.

5. It will, of course, be of great advantage if such a mixture could be used on a universal scale. It certainly produces very little disturbance as compared with the 3 L+ mixture. It can even be used in adults without the fear of the marked local and constitutional reactions that we have seen after injections of the 3 or 5 L+ mixtures. There is no doubt that the use of the latter mixture in a school has made subsequent work in the same school more difficult.

6. The Research Laboratory is furnishing at the present time only the $\frac{1}{10}$ L+ mixture.

Cordially yours,

A. ZINGER.

Dec. 20, 1922.

Editor, MINNESOTA MEDICINE,
St. Paul, Minn.

My Dear Doctor:

I am enclosing paper written and read by our Secretary, Dr. J. C. Jacobs, at quarterly meeting of our society on Dec. 14. This paper proved to be a real live issue and was followed by a spirited discussion lasting two hours by the fifteen physicians in attendance. The Central Minnesota and Kandiyohi-Swift County Medical Societies wish to go on record in formulating and putting into action a campaign of education, covering Kandiyohi, Swift and Meeker Counties. Each physician who is a member of these societies will be called upon to give public talks in the cities and villages of these counties at stated intervals. Committees have been appointed in these counties and the work will start at once.

We also have agreed that, hereafter, in any future legislation, whereby the legal practice of medicine is threatened by illegal medicine, in the form of cults, to take an active part in same and if deemed necessary to go in a body to the legislative halls and give our assistance. We firmly believe that the future of medicine is being assailed, that we have remained dormant and inactive too long, that the public is and has been misled by propaganda and false-

hoods and in order to maintain the future rights of our noble profession each and every one of us must assist in restoring us to our proper place in the minds of the public and, by educational efforts, combat the menace of illegal practices and cults which are fast gaining such a strong foothold in all parts of the country.

We also believe that the present moment is the time to start a central bureau of education and that all physicians be requested to subscribe to its maintenance. A regular yearly fee, of say \$25.00, would make a splendid nucleus. Our society will pledge you its honest efforts if something along this line is started.

Sincerely,

P. C. DAVISON.

Note.—The paper by Dr. Jacobs, here referred to, appears in this number of MINNESOTA MEDICINE.

MISCELLANEOUS

February 14, 1923.

Hon. ———,

St. Paul, Minn.

Dear Sir:

The Association of Minnesota Chiropractors, Inc., are very grateful to the members of the Minnesota Legislature for their opposition to the creation of the proposed "Basic Science Law," or the creation of a sort of a medical super-board with a strong monopolistic tendency, in this State. Our faith in the present Legislature was not misplaced. We felt sure that the Legislature as now constituted would fight consistently for the common good of all the people. And for that reason the Association of Minnesota Chiropractors, Inc., with the utmost sincerity and confidence, in this and subsequent communications relating to Chiropractic, come asking the Minnesota Legislature to so strengthen and fortify the law of this State regulating Chiropractic that this simple and eminently successful treatment of disease may become of still greater benefit to the many thousands who suffer from disease, that they may be restored to their loved ones, to industry and to the State.

Perhaps some of you, who have had no opportunity to study the proven facts regarding Chiropractic, would appreciate a brief statement of this wonderful new science of treating disease, its basic principles and history. It is truly revolutionary and holds for the future health of this State, the Nation and the whole world a promise that exceeds in possibility all other methods of treating disease combined. Japan has become so much interested that she has sent a delegation of Japanese students at the nation's expense to the Palmer School of Chiropractic at Davenport, Iowa. And we feel sure that the time is not far away when this science will be taught in all the leading universities of this country and of the world.

The discovery of Chiropractic was an accident, like many other great discoveries of history. The first accidental adjustment of a vertebra of the human body was given in September, 1895, by D. D. Palmer. This happened in the case of Harvey Lillard, who became deaf suddenly in an elevator accident. Mr. Palmer discovered that one of the vertebrae in the neck had been thrown out of the natural position, thereby causing a pressure on nerves leading to

the ear. After many attempts to adjust this subluxated vertebra it was finally brought back to its normal position and Harvey Lillard's hearing was instantly restored. Then the natural question arose, if this nerve controls the function of hearing, what functions do the other thirty-one pairs of nerves radiating from the spinal column control? It took many years of constant study to determine this question, and it was not until 1903 that the task of charting of these nerves was finally developed into an exact science, art, and philosophy of a non-therapeutic method of restoring health.

The fundamental principle of Chiropractic is founded on the fact of the direct and intimate connection of the brain cells of the human anatomy with the rest of the cellular tissue. The brain is made up of numerous cells and so is the rest of the body. The nerves running from the cells of the body to the cells of the brain are called the sensory nerves or the nerves of sensation, which instantly report to the brain the condition of all tissue cells. The nerves from the brain cells to tissue cells throughout the body are called the motor nerves, which have nine functions that are called into action through the sensory nerves to build up, maintain and repair the body structure and keep it in a normal condition. The expression of all nerves must be normal if a normal condition shall exist in all body tissues. When there is an abnormal expression of nerve force in tissue cells, it is called DISEASE, and when there is a normal expression of nerve force it is called EASE or HEALTH.

CHIROPRACTIC SCIENCE, therefore, is the science, art and philosophy of adjusting and replacing all misaligned vertebra in their proper relation to each other, relieving pressure on nerves radiating to all body tissues from the spinal column in order that they may give expression to all of the nine normal functions of the brain to all tissue cells of the body.

CHIROPRACTIC IS NOT TREATMENT OF DISEASE. *Cause* and *Effect* are the two principles on which Chiropractic bases its claim in removing disease. Scientific minds are agreed in the principle that every cause must have an effect and that there can be no effect without a cause. If, therefore, you simply remove the effect the cause still remains the same potentially. On the contrary, when the cause has been removed and eliminated the effect *per se* ceases to exist. All the older methods of treating disease and caring for the sick have been occupied with treating the disease itself, leaving the cause to produce further trouble. In no sense of the word do Chiropractors treat disease. They skillfully replace mis-aligned vertebra and thereby remove the cause of disease. This is called adjusting.

CHIROPRACTIC is a new scientific method of the study of the anatomical structure of man from earliest ages to the present time. The principle underlying the science of Chiropractic was not discovered until quite recently, but the principle itself, an immutable law of nature, has existed since the creation of the first human being. In this principle there is an exact workable science, an exact specific for a given in co-ordination, of which there can be only two, namely, either lack or excess of function, either of which will produce DISEASE. Nature in her wonderful economy and working in the anatomical structure of man

co-ordinates all functions to the end that EASE (health), which is a natural condition, shall prevail. In this nature cannot fail except where the means through which she functions are interfered with, and all scientific authority agrees that nature functions through the nerves. Hence, any fair-minded person must realize that the science, art and philosophy of Chiropractic is a reasonable, effective and absolutely necessary method of restoring health to suffering humanity. The thousands upon thousands who have come out of the shadow of death to renewed health and happiness testify as to its wonderful mission in the world. Man with all his science cannot cure disease. That must be the work of nature after science has removed the cause of sickness. Chiropractic removes the cause (nerve pressure) which prevents nature from co-ordinating all functions of the human anatomy, and for that reason the trained Chiropractor is entitled to the highest regard and respect as well as to every consideration in the passage of laws that give him an equal chance to practice his profession, because his aim and training in life is not mercenary, but to become a part of the greatest health-restoring and disease-preventing agency in the world.

The Association of Minnesota Chiropractors, Inc., stands for the highest ideals of Chiropractic and its one aim is to raise and keep the Chiropractic standard of qualifications and efficiency in the profession abreast of the times. We realize that just what happened in the early days of the medical profession has happened to our profession. The medical men have had a hard time to curb and clean out of their profession a lot of quacks and charlatans. In the same manner the conscientious, straight Chiropractors are having a hard time to get rid of men in their profession who in reality are Chiropractic quacks and lack the real knowledge of Chiropractic and know next to nothing of its principles and practice. Such men do more harm than good, both to the profession and the sick they treat. For that reason the law regulating Chiropractic in this State should so clearly define the science of Chiropractic and its practice that the public will not be misled just because the law now permits inefficient and poorly trained men, many of them using various methods of camouflage treatment, to hang out a sign designating themselves as Chiropractors. Chiropractic needs no crutches in the form of electricity, massage, stretching machines and what not. It is fully able to stand alone on its merits. The so-called Chiropractor who does not believe and practice this has no business to call himself a Chiropractor, since by his practice he virtually denies the entire science and philosophy of Chiropractic.

Yours truly,

LEGISLATIVE COMMITTEE.

FRANK P. O'DONNELL, D.C.,

Secretary.

EDITOR'S NOTE: The above letter was sent to a member of the Minnesota Legislature, who in turn handed it over to the editor with the remark that the letter certainly sounded plausible.

The relating above of the accidental readjustment of a subluxated cervical vertebra which had caused pressure on nerves leading to the ear, with immediate restoration of hearing, is a typical example of the knowledge of anatomy

possessed by the first chiropractor and the secretary of the Association of Minnesota Chiropractors, Inc., presumably a representative of the modern cult. Whatever may have happened in this case, the interpretation was absolutely wrong.

Any layman, legislator or chiropractor might very easily turn to any anatomy and convince himself that the auditory nerve does not emerge beyond the skull and never in God's world could be impinged by a vertebra. The impossibility of vertebral impingement on other cerebral nerves, for instance the olfactory and optic nerves, is so apparent to one with the least knowledge of anatomy that the mere statement seems entirely unnecessary. Chiropractic science is therefore a science that evidently lays little stress on anatomy. We did not know before that it is a philosophy, too.

The medical profession is accused of treating the effect and neglecting the cause. If there is one object in making a diagnosis it is to determine the cause of the disease.

The statement is made that "man with all his science cannot cure disease." We take it that this applies to chiropractic, too. Medical men do claim they can cure some diseases, such as malaria, diphtheria and syphilis.

We are glad to know that the chiropractor does not use massage or electricity but presumably only spinal manipulation.

MINOR EPIDEMICS

The general practitioner of the smaller towns is sometimes one of the last persons to hear of the minor epidemic.

Apart from the exanthemata, he perhaps feels that he is entitled to three cases of the same kind as coincidences. He has no reliable source of information until the epidemic has passed into history. If he is a good mixer he learns from some traveling man that the symptom complex that is bothering him is widespread. If he is asked by the laity he has to hedge.

If a bulletin were issued by the state epidemiologist p. r. n.—as for instance on the appearance of the present epidemic—if, indeed, there is one—characterized by abdominal symptoms, and if the bulletin were promptly sent out to all general practitioners desiring the bulletins, the information contained would be worth more than all that could be derived from all the diagnostic treatises published.

OBITUARY

DR. WILLIAM HENRY FRITSCHÉ

Dr. William Henry Fritsche succumbed to tuberculosis at the home of his parents, Dr. and Mrs. L. A. Fritsche, New Ulm, Wednesday, January 31, 1923, following a long siege of illness resulting from an attack of scarlet fever in February, last year.

Dr. Fritsche was nearly 28 years of age, having been born in New Ulm, March 20, 1895. After attending the local public schools and graduating from the high school of New Ulm, he took up preliminary medical work at the University

of Wisconsin, Madison, completing his medical education at Marquette University, Milwaukee, where he received his degree as bachelor of science and doctor of medicine and surgery in January, 1919. Thereupon he spent six months as a member of the staff of the Lying-in Hospital, New York City, before returning to New Ulm and becoming associated with his father and elder brother, Dr. Albert Fritsche, in the Fritsche clinic.

Dr. Fritsche was married at Whitewater, Wis., June 12, 1917, to Miss Harriet Noel, who survives him. Two daughters were born to them, one of whom, Margaret, succumbed to scarlet fever April 13, 1922, while the other, Amalia, lost her life as a result of an auto accident at Pueblo, Colo., October 4, 1922, while en route to New Mexico with her parents. Dr. Fritsche is also survived by his parents, as well as by three brothers and two sisters. The latter are: Mrs. Warren Bond, Lakefield; Dr. Albert Fritsche, New Ulm; Miss Louise Fritsche, instructor in the public schools at Blue Earth; Carl Fritsche, student in the medical department of the University of Wisconsin, and Theodore Fritsche, at home.

DR. R. J. HILL

Dr. R. J. Hill, of Minneapolis, president of the Council of the Minnesota State Medical Association, died Friday, February 2, 1923, at his home following a long illness.

DR. ARTHUR M. EASTMAN

Dr. Arthur M. Eastman, formerly of St. Paul, but in recent years residing in Minneapolis, died at his home February 24, 1923. Death was due to pneumonia. Dr. Eastman was a prominent homeopathic physician and for many years was a member of the Minnesota State Board of Medical Examiners.

DR. J. P. SEDGWICK

Dr. Julius Parker Sedgwick, head of the department of pediatrics of the University of Minnesota, died at his home at Minneapolis, February 25, 1923, following a protracted illness.

DR. C. L. CLARK

Dr. C. L. Clark, former deputy coroner and for thirty years general practitioner at White Bear, died at his home in Saint Paul, Friday, February 16, 1923, at the age of 66 years. Death was due to bronchial pneumonia.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MEETING OF THE MINNESOTA STATE MEDICAL ASSOCIATION, OCTOBER 10, 11 AND 12, 1923

Association members are requested to hand in names and subjects to secretaries of the respective sections:

Surgical Section—Dr. Gilbert Thomas, 1009 Nicollet Ave., Minneapolis, Minn.;

Medical Section—Dr. A. C. Baker, Fergus Falls, Minn.; or

Secretary of the State Medical Association, 403 Central Bank Bldg., Saint Paul, Minn.

SPECIAL SERVICE TO AMERICAN MEDICAL ASSOCIATION MEETINGS AT SAN FRANCISCO IN JUNE

The Medical Tours which have proven so highly successful during the past three years to New Orleans, Boston and St. Louis, will again be operated, to San Francisco this summer, by the Harlan Tours, its business managers, 202 South State Street, Chicago, from whom circulars can be secured.

"The Medical Special De Luxe" will leave from Chicago via the Rock Island Lines on Saturday evening, June 16th, and from Minneapolis on the morning of the 17th via the Soo-Canadian Pacific. Special cars will be operated from the principal large cities, being attached to the "De Luxe" at Minneapolis.

The itinerary of the "De Luxe" calls for sightseeing visits to Banff, Lake Louise, Glacier, Victoria, Seattle and Portland, and one of the main features this year is the motor trip from Banff to Lake Louise via Johnson Canyon; other features include the usual de luxe railway equipment, the trip through the Canadian Rockies by daylight, the all-day sail across the Puget Sound by steamer, a banquet at Seattle, and the famous Columbia River Highway motor trip. There will also be the usual distribution of home town papers en route.

The "De Luxe" will arrive at San Francisco on Monday morning, June 25th, at 7:30 o'clock, and the return route can be made direct, or a more extended tour visiting the Big Trees of California, Santa Cruz, Del Monte, Salinas, Santa Barbara, Los Angeles, Pasadena, Catalina Island, Salt Lake City, the Grand Canyon of the Arkansas, the famed Royal Gorge and Colorado Springs.

Special cars will also be operated direct to San Francisco, and another special train is scheduled to depart from Chicago Tuesday evening, June 12th, and from Minneapolis on Wednesday morning via the Soo Line, following the identical itinerary of the "De Luxe" to San Francisco, reaching the convention city on Wednesday evening, June 21st, in time for its members to attend the meetings of the affiliated and non-affiliated organizations which meet prior to the American Medical Sessions.

ANNUAL CONGRESS ON MEDICAL EDUCATION, MEDICAL LICENSURE, PUBLIC HEALTH AND HOSPITALS

An invitation is extended to those interested in the annual meeting of the Congress on Medical Education, Medical Licensure, Public Health and Hospitals to be held March 5, 6 and 7, 1923, at the Congress Hotel in Chicago.

This is a meeting of particular interest to physicians associated with medical education and those on the various

state committees of medical education and hospitals. The meeting will be addressed by Dr. Louis B. Wilson, Director of the Mayo Foundation of Medical Education and Research, Rochester, Minn., and Dr. Richard O. Beard, Associate Professor of Physiology, University of Minnesota Medical School, Minneapolis.

UPPER MISSISSIPPI MEDICAL SOCIETY

The annual meeting of the Upper Mississippi Medical Society was held in the Chamber of Commerce, Brainerd, Tuesday, January 30, 1923, with a representation making this year's meeting one of the best and most successful in the history of the association.

Papers presented before the afternoon session included the following:

"Injuries of the Spleen," by Dr. Theo. Bratrud, Warren. Discussion by Drs. L. E. Daugherty, John A. Evert and B. I. Derauf.

"Local Anesthesia," by Dr. L. E. Daugherty, Saint Paul. Discussion by Drs. W. W. Will and B. F. Van Valkenberg.

"Prostatectomy," by Dr. J. A. Thabes, Brainerd. Discussion by Drs. Theo. Bratrud and Joseph Nicholson.

"Radium Therapy," by Dr. John A. Evert, Saint Paul. Discussion by Drs. J. G. Millspaugh, Theo. Bratrud and B. W. Kelly.

"Urgent Surgery," by Dr. Joseph Nicholson, Brainerd. Discussion by Drs. B. F. Van Valkenberg and B. W. Kelly. "Tetanus, Case Reports and Treatment," by Dr. A. H. Pierce, Wadena. Discussion by Dr. B. W. Kelly.

Officers elected for the coming year are: President, Dr. M. E. Withrow, International Falls; first vice president, Dr. M. P. Gerber, Brainerd; second vice president, Dr. B. F. Van Valkenberg, Long Prairie; third vice president, Dr. W. W. Will, Bertha; secretary-treasurer, Dr. G. I. Badeaux, Brainerd.

Following the regular business session a banquet was served to the guests at the Ransford hotel.

MCLEOD COUNTY MEDICAL SOCIETY

The annual meeting of the McLeod County Medical Society was held at the Hutchinson Community Hospital Thursday, January 25, 1923, with a record attendance.

Officers elected for the ensuing year are: President, Dr. W. R. Schmidt, Glencoe; vice president, Dr. Theo. C. Lund, Hutchinson; secretary and treasurer, Dr. D. L. Axilrod, Hutchinson; delegate to the state convention, Dr. J. B. Clair, Winsted, and alternate, Dr. P. E. Sheppard, Hutchinson.

OF GENERAL INTEREST

Dr. P. M. Hall Ah-Gwa-Ching has returned from a two weeks' trip to Florida.

Dr. Dudley C. Frise, Minneapolis, is recovering from an operation for appendicitis.

Dr. and Mrs. Andrews are the parents of a son, David Irwin, born February 9, 1923, at Rochester.

Dr. F. L. Beckley, of St. Paul, left February 7, for Jacksonville, Florida, for a month's pleasure trip.

Dr. and Mrs. H. D. Burns, of Albert Lea, are the parents of a little daughter, born Tuesday, January 16.

Dr. and Mrs. William Herbst, Rochester, are the parents of a son, William Herbst, III, born January 18, 1923.

Dr. J. B. Stevens, of the Mayo Clinic, was called to Sioux Falls, South Dakota, by the death of his father, January 20.

Dr. O. E. Stewart, formerly of Albert Lea, has become associated with Dr. E. H. Marcum in the practice of medicine at Bemidji.

Dr. Theodore A. Clifton of Isanti is now located in Chatfield, where he will be associated in practice with Dr. F. J. Halloran.

Dr. Herbert Davis, Saint Paul, is recovering from an operation for appendicitis performed early in February at the Miller Hospital.

Dr. Douglas F. Wood, of Minneapolis, was recently elected president of the Minnesota Society of the Sons of the American Revolution.

Dr. N. S. Shulean, who has been in Somerset, Pa., for the past year, has returned to her home in Cambridge, Minnesota, for an indefinite stay.

Dr. W. F. Braasch, of Rochester, attended the meetings of the Clinical Society of the Genital Urinary Surgeons in Chicago, January 26 and 27.

Dr. John Lyng, of Minneapolis, is now associated with Dr. F. L. Kling, in the Milaca Hospital, where he will continue the practice of surgery.

Dr. D. W. McDougald, formerly of Le Sueur, who is engaged in postgraduate work in the East, is recovering from an attack of typhoid fever.

Dr. J. T. Dahlin, recently of Duluth, where he completed his internship at St. Mary's Hospital, has located in Middle River for the practice of medicine.

Dr. Herman P. Radtke, who recently completed his internship at St. Mary's hospital in Duluth, is to be associated with the Rood hospital at Chisholm.

Dr. O. E. Campbell, formerly of Duluth and Boy River, has returned to Waubun, where he practiced several years ago, for the practice of medicine and surgery.

Dr. Archibald W. Howe, Minneapolis, has returned from Vienna, where he has been engaged in postgraduate study. Dr. Howe also spent some time in Paris and Zurich.

Word has been received of the death of Mrs. Alfred Hoff, wife of Dr. Alfred Hoff of Saint Paul, which occurred Friday, February 2, 1923. Death was due to heart disease.

Dr. C. K. Maytum, of the Mayo Clinic, is caring for the practice of his father, who is in the South Dakota Senate. At the adjournment of the session, Dr. Maytum will return to the Clinic.

Dr. Edward T. Martin, formerly of Marble, is now associated in his practice with Dr. N. D. Kean, at Coleraine. Dr. Martin, who is mayor of Marble, will continue in that office until the spring election.

Dr. and Mrs. P. P. Vinson are the parents of a daughter, Portia Ann, born February 1, 1923.

Dr. A. D. Corneia, formerly of the Earl Clinic, St. Paul, and more recently of Centerville, Iowa, has returned to the Twin Cities and will be associated in his practice with

Prof. J. J. R. Macleod and Dr. F. G. Banting, of the Department of Physiology of the University of Toronto, gave two Mayo Foundation lectures February 7 and 8, on the Value of Insulin in the Treatment of Diabetes.

Dr. R. M. Rosenwald, of Minneapolis.

Dr. A. T. Laird of Nopeming is the new president of the Minnesota Occupational Therapy Association, following his election at the first annual meeting held at the City and County Hospital, Minneapolis, February 5.

Dr. John W. Bell of Minneapolis has been spending the winter in the Texas hills, where he reports a beneficial rest following his illness last fall. Dr. Bell plans to resume his practice in Minneapolis about the first of April.

Plans are being made at Alexandria for a new community hospital to cost approximately \$50,000. Dr. A. D. Haskell is chairman of a special hospital investigation committee, which will have charge of promoting the new institution.

Dr. H. V. Hanson, formerly of Willmar, has discontinued his practice at the Union Clinic Hospital and has accepted a government position with the United States Veterans Bureau in Minneapolis, as an eye, ear, nose and throat specialist.

Dr. Thomas Myers, who is associated in practice with Dr. T. L. Birnberg, 744 Lowry Bldg., Saint Paul, has just returned from a five months' trip to the pediatric clinics in St. Louis, Johns Hopkins University, New York and Chicago.

Dr. Guy Campbell, for several years a physician at Plentywood, Montana, is now located at Melrose, where he is associated in practice with his father, Dr. J. E. Campbell. Dr. Guy Campbell recently completed a postgraduate course in medicine in Chicago.

Dr. Wallace W. Holley, of Warren, Minnesota, and Miss Pearle Marguerite Palmer, daughter of Dr. and Mrs. Ford Norman Palmer, of Los Angeles, Cal., were married Tuesday, January 9, at the home of the bride's parents. Dr. and Mrs. Holley are now at home at 308 Third Street, Warren, Minnesota.

Appointments to fellowship in the American Public Health Association recently included three Minnesota physicians: Dr. A. J. Chesley, executive officer of the Minnesota State Board of Health; Dr. L. D. Bristol, professor of preventive medicine and public health at the University of Minnesota; and Dr. F. E. Harrington, health commissioner of Minneapolis.

Dr. and Mrs. O. J. Seifert, of New Ulm, who have been in Europe for several months, sailed for the United States, February 7, on the steamship "America" to arrive at home the latter part of the month. The major part of the time was spent in Berlin, where Dr. Seifert attended clinics at the large hospitals in the German capital. He also spent some time in Vienna at the Allgemeine Krankenhaus.

Dr. and Mr. J. W. Andrews, of Mankato, left February 10 for a two months' trip to South America where Dr.

Andrews plans to attend the national convention of the College of Surgeons, which is to be held in Buenos Aires. Following the convention Dr. and Mrs. Andrews will attend the mid-winter fair at Rio de Janeiro, which is being put on in celebration of the Brazil centennial. They will return about April 14.

Dr. Asa W. Daniels, one of the earliest pioneers of Minnesota, who was government physician to the Sioux Indians at Fort Ridgely in the early '50's, celebrated his ninety-fourth birthday at his winter home in Pomona, California, Monday, January 15. Dr. Daniels is one of the oldest physicians in the state and was active in the establishment of the Minnesota State Medical Association, of which he is now an honorary member.

The first number of the *Northwestern Health Journal*, published under the auspices of the Minnesota Public Health Association, appeared in February. This journal, while intended primarily for the public, needs the support of the profession throughout the state in order to properly introduce it. A special introductory offer of a two years' subscription for the price of one is made to those who send in their subscription before April 15. Our readers are urged to send in fifty cents to the office of the *Northwestern Health Journal*, 300 Shubert Bldg., Saint Paul, which will entitle them to two years' subscription.

A recent cable dispatch from Tokyo announces the appointment of Baron Yoshihiro Takagi, chief surgeon and professor of surgery in the Tokyo Charity Hospital and Medical College, as a member of a commission of six Japanese doctors who will arrive in the United States early in March as guests of the Rockefeller Foundation for the purpose of studying American and Canadian medical institutions and methods. The commission was appointed by the Japanese Minister of Education, Doctor Eikichi Kamada, to whom the Foundation's invitation was extended by President Vincent through Baron Shidehara, the Japanese ambassador at Washington. Nominations for membership in the commission were made by the Japanese Committee for Graduate Medical Education in the United States, headed by Baron Sakatani, under whose auspices a number of Japanese physicians have pursued postgraduate studies in the United States.

Dr. Sofie A. Nordhoff-Jung, of Washington, District of Columbia, United States of America, has founded an annual prize of five hundred dollars bearing the title of "The Sofie A. Nordhoff-Jung Cancer Research Prize." This prize is destined for the encouragement of researches in the etiology, prevention and treatment of cancer. It will be awarded by a commission, composed of members of the University of Munich, Bavaria, and be granted for the first time in December of the year nineteen hundred and twenty-three. The commission consists of Professors Borst, Doederlein and Sauerbruch, with Professor von Romberg as chairman. This body is empowered to elect successors. The award will be made as a recognition of the most conspicuous work in the world literature bearing on cancer research, done at a time antecedent to the allotment of the award. Though the prize will not be awarded on a competitive basis the commission invites all research workers in cancer to submit literature on this subject.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

MEETING OF JANUARY 17, 1923

Dr. H. Longstreet Taylor presiding

DR. GEO. DOUGLAS HEAD reported a case of pernicious anemia showing very remarkable forms of nucleated red blood cells.

Mrs. A., age 28 years, married, children, was seen by Dr. Christian Hegge, May 3, 1922, with a very high grade form of anemia. Patient had given birth to a child seven months prior to the time I saw her. The childbirth had been without complications. Some weeks later she had an attack of la grippe but recovered from this without complications. Prior to the birth of her child she had been told that her blood was poor but no blood examinations had been made. About two months prior to the time of her examination she developed fever, weakness and prostration, became bedridden, the skin and the mucous membranes became pale. She did not lose weight. Blood examination was made at that time, showing red blood cells 1,200,000, leucocytes 3,500, hemoglobin 25 per cent, color index 1.1.

Patient had been in the hospital three weeks at the time I saw her, running a continuous temperature, with marked exhaustion and weakness. On examination, patient presented a well-nourished appearance, but an extremely waxy white color. Temperature 105. Mucous membranes very pale. Many old decayed teeth. Physical examination negative outside of the enlarged liver, reaching almost to the transverse umbilical line. Spleen was markedly enlarged, reaching to the costal margin. There were retinal hemorrhages in both eyes and one or two dime-sized purpuric spots in the skin of either leg. No enlargement of lymph glands. No tenderness in the bones. The blood examination at the time this smear was made showed red blood cells 730,000, white cells 8,400, hemoglobin 17 per cent, with large numbers of nucleated red cells in the blood, which are well illustrated by this beautiful water-color drawing.

The water-color drawing which I here present shows a remarkable picture of normal megaloblasts, megaloblasts showing karyokenetic figures, some of them in diaster stage, others showing a dividing nucleus with three nuclear bodies, megaloblasts with nuclei undergoing pyknotic changes—some of the cells showing as many as six to eight round nuclear fragments, the like of which I have not previously seen in the examination of a very large number of smears of the blood of patients with pernicious anemia. It is particularly to these latter cells with the marked fragmentation and division of the nucleus that I wish to call your attention. It is for this reason that I have presented the water-color drawing for your inspection.

The patient lived only two days after I saw her and the diagnosis of pernicious anemia was made.

I would like to inquire whether or not, in the experience of the members here, a very active fragmentation of the nuclei has any prognostic significance in cases of pernicious anemia. I have an idea that where one finds rather active breaking down processes in the nuclei as shown by fragmentation of the nuclei, those cases as a rule run a very rapid downhill course.

DR. A. SCHWYZER reported the following case:

The case which I want to report is a woman who had about fifteen years ago an acute peritoneal attack—a tumor of the right ovary, partly cystic and partly dermoid, and that was removed. Since last summer she began to feel below par. She came to me a short time ago presenting a tumor developing in the splenic area; it felt just like the spleen or kidney, and the blood picture was of secondary anemia. Catheterization showed that the tumor was the kidney. On examination with sodium we found a dilated ureter, and the pelvis was branched all through the tumor. On the right side we could insert the catheter only 3 cm. but no urine came, while from the catheter which was inserted into the left side, i. e., the tumor kidney, the urine came very profusely. But not a drop of urine from the other side, which was thought to be the healthy side. So we could not operate. She was catheterized again on the healthy side and the second time we could not get in farther than 3 cm. either. We injected the right kidney pelvis, though the catheter would only enter a very short distance, and obtained a beautiful normal pyelogram. The kidney was normal in shape, but there was no urine, so we took a very small catheter and got it in, but still got no urine. We examined the left side again and it was working overtime.

While we were letting the patient rest for a few days and were figuring what to do, she started to have pain and passed some blood and clots which were casts of the left ureter. It has looked, on account of the profuse secretion, as though we were dealing with a benign condition. Furthermore, hypernephroma would hardly give us this branching of the pelvis. Naturally we did not dare to remove the one functioning kidney. The bleeding came about five days later so it did not come from the catheterization. The patient suffered severely from pain.

We then tried radium and within about thirty-six hours the bleeding stopped and it has not returned. That was five or six days ago. What else should be done with the case I don't know.

We put the radium over the tumor area very well filtered by 2 mm. of lead, 1 mm. of brass, and .5 mm. of silver. She had 2,700 milligram hours.

Discussion: DR. FARR: I think we have all had the experience in catheterizing to find that one or the other side would fail to secrete even though we got the catheter in. I believe in those cases it would be well to give indigo-carmin hypodermically and watch the spurts from that side without the ureteral catheter.

DR. SCHWYZER: I am quite sure there was no urine from that side on three sittings. The permeability of the catheters was tested every time before and after insertion. Furthermore, we felt that perhaps the urine did go along the side of the catheter, so I used the Harris segregator, which makes two pouches of the bladder, but still not a drop of urine came from the right side, while the left kidney worked very freely.

DR. F. W. SCHLUTZ reported the following case:

The case I wish to report tonight concerns a little girl eight years old. She was brought to the office for a general examination and for a nervous disorder.

A very peculiar posture of the child was one of the most

striking things observed. A cursory examination of the chest and palpation seemed to reveal a complete absence of both clavicles. This was confirmed by x-ray examination.

The general examination of the child showed no other unusual abnormalities. Outside of the nervous state and a moderate insomnia, she was in pretty fair condition. The general body development was good. Her weight was 49.5 pounds. The tissues had a fairly good tone. All the internal organs, including the heart, showed a normal condition.

She is under the care of an orthodontist for mal-occlusion. The chest deformity, which was really very considerable, had never been noticed before or considered abnormal. The mother states that the child is capable of all forms of exercise, in fact takes gymnasium work at the school, and has never complained of any discomfort or inability to perform the usual tasks or forms of exercise or play that children of her age engage in. I have personally never seen a case just like it before.

DR. H. B. ZIMMERMAN reported a case of suppurating appendicitis.

This case is interesting only because of unusual circumstances that made the diagnosis confusing. The patient was a man about 55 years of age, rather obese, and had an umbilical hernia about the size of an orange. He was observed by a very competent physician the day before I saw him. At this time the diagnosis was made of a strangulated umbilical hernia. The history was that the night before the patient was taken with violent abdominal pain, with vomiting, and the hernia was irreducible. He refused to go to the hospital at this time, so ice-bags were applied over the hernia and I saw him the next day. Up to this time the patient had no fever and his pulse was practically normal. When I saw him his abdomen was very much distended and he was still vomiting large quantities of brownish fluid. He was in great pain, but the pain was constant, not colicky in character. The hernia was still irreducible and he was not passing any gas by rectum. The leucocyte count was about 19,000 and the differential count practically normal.

I presumed that the patient had a strangulated umbilical hernia, and at operation made an incision in such a manner as to expose the neck of the sac. On opening the sac we found it to contain only omentum. This omentum, although it was matted together and congested, was not strangulated, and could easily be reduced. The condition of the hernia would not sufficiently explain his symptoms. Therefore the abdomen was opened by incising the rectus muscles on either side, so exposing the peritoneum. The intestines were diffusely inflamed and covered with a fibrinous exudate. The abdomen was explored, and upon exploring the right lower quadrant, purulent fluid escaped, and with some difficulty a gangrenous appendix was delivered into the wound. The wound was closed by incising the upper over the lower flaps. The patient made a slow but perfect recovery. This is the only case of a really inflamed appendix with a diffuse peritonitis that I have ever seen that did not have fever.

Discussion. DR. HERBERT JONES: I would like to ask if it is a good procedure to take out the appendix without drainage in gangrenous appendicitis?

DR. ZIMMERMAN: I did not want to bring up that discussion. I believe that in cases of peritonitis wherein the reaction to the infection is diffuse throughout the peritoneal cavity and where there is no apparent effort on the part of the peritoneum to wall off or localize the infection, then, after carefully removing all necrotic tissue such as a gangrenous appendix, the abdomen is best securely closed without any drain into the peritoneal cavity.

DR. FARR: I would like to ask how sure the Doctor is that there never was any rise of temperature in this case. Could he be positive of that? Also, I would like to ask about the advisability of x-raying cases of intestinal obstruction with the transverse plate and also directing through without the use of barium, as suggested by Case.

DR. ZIMMERMAN: The temperature in two days was taken from 4 to 5 times at varying intervals. The last time, immediately before operation, it was taken by rectum. This work of Case's is new to me and I did not feel competent to properly interpret such pictures, but I believe that it will come to be a valuable diagnostic agent.

DR. FRANK BURCH read a paper entitled "Intra-Ocular Sarcoma" and showed several lantern slides.

Discussion. DR. BROWN: I would like to ask Dr. Burch if he doesn't feel, in the diagnosis of these cases and especially those anterior to the equator, that transillumination gives a picture that gives a clue to the diagnosis.

DR. BURCH: I have been very much disappointed in transillumination in the diagnosis of these tumors. In only one of these five cases has this been of much value; that in the patient 77 years of age who had glaucoma. In that case I felt positive that transillumination aided diagnosis. The only place that transillumination is of value is when the growths are anterior to the equator.

DR. SCHWYZER: What is the prognosis in general?

DR. BURCH: The prognosis is as I gave it here—about 50 per cent in cases where there are no metastases. Collins observed 79 cases in a period of 29 months and he found the recurrences were about 50 per cent. The case that I mentioned had a metastasis in the liver after five years. I found her accidentally in the hospital wards.

DR. E. M. JONES read his Thesis entitled "Affections of the Round Ligaments with report of a case of tuberculous hydrocele of both ligaments."

DR. ROTHROCK: It has been my fortune to see two or three tumors of the round ligament, which were similar to those which the Doctor has described. The first was a large fibroid tumor, larger than a man's hand. Before operation the diagnosis was much in doubt. All we could say was that we had a solid tumor; probably an inter-ligamentary fibroid tumor of the uterus, or perhaps some large tumor of the ovary. The growth was very round, pretty firm and hard, with a history of slow growth of about three years. The operation was attended with no difficulty; very simple in fact. I think the specimen is now in the University of Minnesota museum. I have also run across an adenomyoma of the round ligament; very typical; about the size of a hickory nut. I also found a cystic tumor once where I was unable to determine the diagnosis beforehand. We thought we might probably have a hernia and we found a small cystic tumor which was such as the Doctor has described. This is undoubtedly a very unusual case; an unusual location of tuberculosis, and the question is, how

did it get there? Years ago the general dictum was that nearly all such cases were hematogenous in origin especially where the Fallopian tubes were usually involved. But that dictum has changed. Some writers have come to the conclusion that it is not necessarily so but that the tubercle bacillus might gain entrance (in tuberculosis of the peritoneum) from the pleural cavity, by lymphatic extension. Thus the erect posture of the patient and the close proximity of the tubes, the latter could easily become involved without the infection being hematogenous. I should say this must be a very unusual case and so far as my reading goes I don't remember seeing a report of such a case. The differential diagnosis between the two was a matter of very great interest to me.

DR. A. SCHWYZER: I want to congratulate Dr. Jones on this thesis. He has taken in the whole subject very comprehensively and the last case is of particular interest and exactly reported. Dr. Rothrock has said that tuberculosis could start from any focus in the peritoneum. If the infection wasn't through the diaphragm it might have been from a smaller lesion, perhaps a broken-down tuberculous mesenteric gland. I have one such case in my mind. The tuberculosis then makes perhaps little trouble locally. Tuberculosis somewhere in the abdomen might go for a long time without any symptoms and a secondary infection from there may then occur in other areas where some predisposition exists.

DR. BENJAMIN: I would like to ask Dr. Jones if he opened the abdomen?

DR. JONES: No.

DR. BENJAMIN: Was there no distention?

DR. JONES: None at all.

DR. BENJAMIN: I have never seen anything like this before. All the cases I have seen were in the appendix or in the tubes. Sooner or later, if these are allowed to go on, the ovaries are affected and the round ligaments are indirectly affected. I have seen one tumor and two or three hydroceles of the round ligament. I cannot conceive of tuberculosis of the round ligament, unless it is caused by or the result of traumatism, if not from hematogenous infection. I never supposed there were so many tumors of this round ligament as Dr. Jones has reported, and I think we are to be congratulated on having Dr. Jones look up these statistics for us.

DR. JONES, in closing: I brought out in the paper that the pleurisy that the patient complained of in 1921 was undoubtedly of tuberculous origin and I feel this establishes the original focus of the infection.

I also wish to emphasize the fact that sarcoma of the round ligament is a much more serious condition than we have been led to believe.

I might add that I heard from this patient yesterday and she has very much improved; the only remaining symptom is a slight dysuria, which bothers her at times.

HARRY P. RITCHIE, Secy.

NEW AND NON-OFFICIAL REMEDIES

During January, the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

LEDERLE ANTITOXIN LABORATORIES:

Bacillus Acidophilus Milk-Lederle.

E. R. SQUIBB AND SONS:

Bacillus Diphtheroid Allergen-Squibb.

Staphylococcus Citreus Allergen-Squibb.

Bacillus Influenzae Allergen-Squibb.

Egg Yolk Globulin Allergen-Squibb.

Horse Serum Allergen-Squibb.

WINTHROP CHEMICAL COMPANY:

Theocin Sodium Acetate.

NEW AND NON-OFFICIAL REMEDIES

Digitan Ampules (for Hypodermic Use).—Each c.c. contains 16 minims (1 c.c.) of a sterilized solution of digitan (see New and Non-official Remedies, 1922, p. 105), equivalent to digitan, 1.5 grains (0.1 gm.). Merck and Co., New York.

Digitan Solution (for Oral Use).—1 c.c. contains digitan (see New and Non-official Remedies, 1922, p. 105), 1.5 grains (0.1 gm.). Merck and Co., New York. (Jour. A. M. A., Jan. 13, 1923, page 106.)

Bacillus diphtheroid Allergen-Squibb.—Prepared from the protein from Bacillus diphtheriae.

Staphylococcus citreus Allergen-Squibb.—Prepared from the protein from Staphylococcus citreus.

Bacillus Influenzae Allergen-Squibb.—Prepared from the protein from Bacillus Influenzae. For a description of the Bacterial Allergen-Squibb, see New and Non-official Remedies, 1922, p. 247.

Egg Yolk Globulin Allergen-Squibb.—Prepared from the purified globulin of yolks of hens' eggs.

Horse Serum Allergen-Squibb.—Prepared from protein of normal horse serum.

For a description of *Food Allergen-Squibb*, see New and Non-official Remedies, 1922, p. 241. E. R. Squibb and Sons, New York. (Jour. A. M. A., Jan. 27, 1923, p. 251.)

PROPAGANDA FOR REFORM

The Disappointments of Hexamethylenamin.—Hexamethylenamin has joined the large and growing group of drugs of which much has been expected but which have failed to justify the hopes of their champions. The use to which hexamethylenamin is still devoted with apparent scientific justification is in preventing the growth of microorganisms in the urinary tract and in destroying them when they are present in the urine in infectious diseases, such as typhoid fever. The drug is recommended as an antiseptic in cystitis and as a prophylactic prior to operations on the urinary tract.

Its possible efficacy, however, depends on the elimination through the kidneys with a urine that remains distinctly acid in reaction; otherwise, no benefit is to be expected. Hexamethylenamin has no material antiseptic value as an antiseptic in the cerebrospinal fluid during spinal meningitis. It is not a uric acid solvent. Finally, the drug has

been shown to have no diuretic potency. Furthermore, hexamethylenamin is said to be liable to produce renal irritation when the dosage is large or the use protracted. (Jour. A. M. A., Jan. 6, 1923, p. 37.)

Present Status of Insulin.—The investigators of "Insulin"—the new pancreatic extract proposed for the treatment of diabetes—have applied for a patent on the product in Canada, United States and Great Britain. The patent for Canada and the United States has been tendered, when granted, to the University of Toronto. The University proposes to safeguard the product against commercial exploitation and to insure the marketing of a standardized product. From the present indications it is hoped that the experimental period will be ended during the first half of 1923 so that the product will become available. Dr. Macleod believes that "Insulin" will never entirely replace careful dietary regulations, but that it is of undoubted value in assisting the weakened power to metabolize carbohydrates.

It is to be hoped that the University of Toronto will be able to control the advertising claims and methods of marketing of the product. (Jour. A. M. A., Jan. 6, 1923, p. 36.)

Antiberiberi Vitamin Concentrate-Metz.—The Council on Pharmacy and Chemistry reports that the Metz Laboratories have requested the acceptance for New and Non-official Remedies of Antiberiberi Vitamin Concentrate-Metz. The firm supplied adequate information in regard to the process whereby the product is obtained, and has presented evidence to show that the potency of the product is controlled by adequate animal tests. The firm, however, presented no proof to indicate that the product is of value therapeutically in human beings, and hence it could not be admitted to New and Non-official Remedies. The firm wished to make available to students and investigators of nutrition a product which is claimed to be antineuritic (antiberiberi) when fed to pigeons. It increases the food intake of rats fed on substance deficient in vitamin B and causes increased weight, but not to the same extent as does the vitamin B (according to McCollum's nomenclature). The Council deemed that from a scientific standpoint Antiberiberi Vitamin Concentrate-Metz is suitable for study, suitable for animal experiments and for controlled experiments on man, and hence authorized publication of a preliminary report.

Antiberiberi Vitamin Concentrate-Metz is prepared from brewers' yeast.

The vitamin extract is standardized so that 0.065 gm. shall represent the antineuritic potency of 10 gm. of freshly pressed brewers' yeast. The product is marketed in the form of powder tablets, and solution (1 c.c. containing the antineuritic potency of 10 gm. freshly pressed brewers' yeast). (Jour. A. M. A., Dec. 13, 1922, p. 106.)

Culture-Lac Omitted from N. N. R. and Optolactin Not Accepted.—Culture-Lac is described in New and Non-official Remedies, 1922, as a culture of *Bacillus bulgaricus* manufactured by the Geck Laboratories, New York. The Special Pharmacal Co., Inc., Buffalo, N. Y., advised the Council on Pharmacy and Chemistry that it now owned Culture-Lac. The product now marketed, however, is not the preparation described in New and Non-official Remedies as Culture-Lac, but is said to be a culture containing *Bacillus acidophilus* and *Bacillus bulgaricus*. The Council directed that the Culture-Lac of the Geck Laboratories be

omitted from New and Non-official Remedies because it is off the market. The Council declared the Culture-Lac of the Special Pharmacal Co., Inc., to be inadmissible to New and Non-official Remedies (1) because there is no acceptable evidence for the administration of a mixture of *B. bulgaricus* and *B. acidophilus*, and (2) because the preparation was marketed with unwarranted therapeutic claims.

Optolactin is the name applied by Fairchild Bros. and Foster to a tablet said to contain mixed cultures of *B. bulgaricus* and *B. acidophilus*. The Council on Pharmacy and Chemistry declared Optolactin inadmissible to New and Non-official Remedies (1) because there is no acceptable evidence for the use of the mixture; (2) because its name is not descriptive of the composition; and (3) because the circular accompanying the trade package is likely to lead to the ill-advised use of Optolactin by the public. (Jour. A. M. A., Jan. 13, 1923, p. 127.)

Bacillus Acidophilus and Intestinal Putrefaction.—While the administration of soured milk products is at times beneficial, the cause of this beneficial action is still undetermined. The belief that the Bulgarian bacillus can be permanently implanted in the intestinal tract and that this implantation is responsible for the effects is no longer tenable. Of late attention has been called to the effects of the administration of milk cultures of *Bacillus acidophilus*, which is stated to be a normal inhabitant of the human intestinal tract.

It is reported that this bacillus may be successfully implanted in the intestinal tract provided a suitable pabulum is provided. It has been assumed that the acidity of putrefactive organisms would be almost entirely suppressed by a change of the flora produced by the administration of milk containing cultures of *Bacillus acidophilus* and that with such implantation the somewhat hypothetical toxic products charged with harm to the body might also be expected to be suppressed. If indican excretion, however, may be taken as an index of intestinal putrefaction, it now appears that implantation of *Bacillus acidophilus* in the intestine does not lower the putrefactive process.

This suggests that favorable clinical effects produced by the administration of lactose cultures of *Bacillus acidophilus* are not primarily dependent on decreased production of the antecedents of indican. (Jour. A. M. A., Jan. 20, 1923, p. 186.)

Quayle's "Bob-White Habit Sinkers."—Charles H. Quayle, M.D., of Madison, Ohio, "Medical Director" of the "Dr. Quayle's Sanitarium, A Retreat for Drug Addicts, Alcoholics, and Cigarette Inveterates" and "Specialist in Drug and Liquor Addiction," has been exploiting an alleged cure for chronic morphinism "and any other drug addiction." Formerly the treatment was "not for sale to any layman or person who wishes to treat himself" and physicians were importuned to use it. Today we find the Quayle's product advertised in the Police Gazette and similar literary productions. A "treatment" was purchased by a layman (for twenty-five dollars) and turned over to the A. M. A. Chemical Laboratory for analysis. The "treatment" consisted of four boxes of pills labeled as follows:

"No. 1—Eliminative." (Contained 3 chocolate-coated pills and 1 capsule.)

"No. 2—Antidote." (Contained 323 yellow-coated tablets.)

"No. 3—Nerve Tonic." (Contained 37 red-coated pills.)
 "Special Eliminative Bowel Tablets." (Contained twelve white-coated tablets.)

The analysis demonstrated that the "treatment" is essentially (1) active elimination by cathartics; (2) the administration of atropin during the stage of morphin withdrawal; and (3) the use of strychnin at the close of the "treatment." It is evident that this is no more a cure than could be devised by any physician who is familiar with modern medical literature. No physician will believe that a patient suffering from chronic morphinism can cure himself by any such method as that exploited by Quayle. (Jour. A. M. A., Jan. 27, 1923, p. 270.)

PROGRESS

Abstracts to be submitted to Section Supervisors.

MEDICINE

SUPERVISORS:

F. J. HIRSCHBOECK,

FIDELITY BLDG., DULUTH

THOMAS A. PEPPARD,

LA SALLE BLDG., MINNEAPOLIS

SUGGESTIONS FOR HISTORY-TAKING IN SYPHILIS—Joseph Earle Moore and Albert Keidel (Johns Hopkins University): The following outline of questions necessary for accurate history-taking in syphilis, is that in use for the instruction of students in the Syphilis Department of the Medical Clinic of the Johns Hopkins Hospital. It has been suggested to us that the outline may be of interest to practitioners of medicine.

In so protean a disease as syphilis, accurate history-taking is imperative. In many instances, a diagnosis of syphilis must stand or fall on the information elicited by questioning. It is daily our experience to meet with individuals who tell a story of a previous genital sore, diagnosed elsewhere as syphilis and treated with a little mercury or a few arsphenamins. Such a patient may desire information as to whether or not he is cured. A thorough clinical and laboratory examination fails to reveal any evidence of syphilis and it then becomes necessary to decide whether the original diagnosis was correct, and if the patient actually had syphilis. Inasmuch as the majority of patients in this group have been given pitifully inadequate treatment, it is obvious that the whole future course will depend on a proper decision. This can only be arrived at by a correct interpretation of accurate questioning.

We have frequently found it necessary to deplore looseness of terms in history-taking. Such statements as "the patient had a chancre in 1898" are not permitted in our work. The examiner must use the term "genital sore," with a careful description of its characteristics, and is allowed to use the term "chancre" only after his own mind is made up as to the accuracy of the statement.

We have found the outline given below to be of the utmost value in our own work. It must be used, of course,

as an addition to the usual questions asked in taking a routine medical history, including particularly amnesic data relating to the cardio-respiratory, gastro-intestinal, and genito-urinary systems.

A series of questions is suggested, study of which will bring out the essential factors. In a history of syphilis it is important to state answers either positively or negatively. Where definite lesions are present a complete description should be given.

Syphilis may be either congenital or acquired. When congenital syphilis is suspected the family history is of the utmost importance. In acquired syphilis it is necessary only in so far as direct communication of the disease to other members of the family is concerned (marital history). Questions will depend upon the stage of the disease; in a patient with a chancre questions as to tertiary and neuro-syphilis are superfluous; on the other hand, in a suspected tabes, for example, all of the points below should be considered. Not infrequently a patient will have no knowledge of the nature of his illness, previous manifestations having been overlooked or misinterpreted, and it then becomes necessary to reconstruct a history of syphilis from data given or implied in the patient's statements, and from replies to well-directed questions.

Family History—(a) If congenital syphilis is suspected, the history is often better obtained from parents or close relatives than from the patient.

Father and mother? If living, age and state of health? Have they been examined for syphilis and with what result? If dead, age at and cause of death with particular reference to "strokes," paralyzes, "softening of the brain," locomotor ataxia, insanity, heart disease, rheumatism? The order and result of pregnancies in the family with dates? How many stillborn? How many miscarriages (important)? Duration of pregnancy at time of miscarriage? Time relation of miscarriages to other pregnancies? Brothers and sisters living? Age and state of health of each? Did any ever have snuffles or cold in the head at or shortly after birth, generalized skin rash, peeling eruption on the palms and soles, or sores about the mouth and anus early in life? Any other eruptions in early childhood? Any eye trouble (interstitial keratitis)? Any ear trouble? Any bone trouble (periostitis)? Swollen joints? Notching of second teeth? Convulsions, idiocy or feeble mindedness? Have the living children been examined for syphilis and with what result? Brothers and sisters dead? How many? Age at and cause of death?

(b) If Acquired Syphilis—Is patient married? How long? Age and state of health of partner? Symptoms of syphilis in partner? Pregnancies, how many, order of occurrence and what result? Number of miscarriages, stillbirths, deaths in infancy? Indicate in the scheme, if possible, the point when syphilis enters the family history. Living children, name, age, and sex of each? Any manifestations of congenital syphilis in offspring (see above)? Have the living children been examined for syphilis? What result? (In the colored race it is well to inquire for pregnancies regardless of marital state.)

History of Syphilis—Proceed by a definite routine, as suggested by the following outline. The method differs somewhat in males and females, and in early and late cases.

Primary (Male)—When did the patient have a genital sore? (Do not use the word chancre.) Its location on the penis or elsewhere on the genitalia (frequently of chancroids at the frenum)? Its time relation to sexual exposure if definitely obtainable? Who was the partner—professional prostitute, street walker, friend, wife, etc? (Be tactful in questions about wife or husband.) Was the sore single or multiple? Painless or painful? Shape round or irregular? Size? Spreading rapidly or not? Base clean or dirty? Much discharge, and, if so, character? Hard or soft to touch? Elevated or depressed? Color? How long did it last? Complicated by bubo? If so, was this painful or painless? Did it break down and suppurate? Was it incised? Unilateral or bilateral? Did the patient show the sore to a physician? His name? How soon after the onset? His diagnosis? Was a dark-field examination made? Result of this? What was the treatment—local or general (see below)? What effect did treatment have on the sore? Was a Wassermann done, and, if so, with what result? Has the patient ever had more than one genital sore? If so, date and character of each (see above)? If he denies sore altogether, did he ever have gonorrhea (strain, clap)? How long did it last and what were its complications (endo-urethral chancre)? If he denies all possible primary genital lesions, did he ever have secondaries (see below)? Is there a history of a possible extra-genital primary (lips, tongue, tonsils, fingers)? Its characteristics (see above with special reference to satellite adenopathy)?

Primary (Female)—In females the history of a primary sore is often difficult or impossible to obtain, because so many occur without the patient's knowledge (cervix, vagina, small sores on nymphae, etc.).

Were there any sores about the privates? Their characteristics (see above)? If not, was there ever a vaginal discharge? When, and what was its duration and character? Any symptoms pointing to a Neisser infection (dysuria, redness, swelling and pain of the genitalia, pelvic inflammatory disease, etc.)?

Secondary Manifestations (no difference in men and women)—Cutaneous rash? Its time relation to a possible primary? Its distribution? Character of lesions? Color? Elevated or not? Itching? Other subjective symptoms? Duration? Sores in the mouth? Their relation to tobacco? Their location (lips, tongue, etc.)? Their character? Sore throat? Sores about the anus or genitalia? Their character—elevated, ulcers, piles, etc.? Alopecia? Headache? Its severity? Worse at night or in the daytime? (Syphilitic pain is practically always worse at night.) Its duration? Malaise? Fever? Bone (osteocopic) pains? What bones? Worse at night? Were bones tender to touch? Any joints involved? Inflammation of eyes? Any glandular swelling? Were any of these lesions seen by a physician? His diagnosis? Treatment? Its effect on lesions?

Tertiary Manifestations (inquire for lesions occurring 1-7 years or more after onset of disease)—Time of appearance of lesions? Their distribution (asymmetry)? Eruptions anywhere on the body? Their character? Ulcers? Periostritis? Painful swelling (especially on exposed bones such as cranial bones, clavicles, sternum, ribs, tibiae, and ulnae)? Their chronicity? Their relation to trauma? Their ten-

dency to heal and break down again? Tissue loss? Scars, pigmented or not? "Rheumatism"? Persistent headache worse at night? Sore throat? Aphonia? Fluid regurgitation through the nose? Loss of weight? Feeling of below par? Any visceral complaints? (The necessity of inquiring of every case the essential points in the medical history relating to respiratory, G. I., and G. U. tracts, and especially the cardio-vascular system, is again emphasized).

Neurosyphilis (the order of appearance of symptoms is of great importance)—Headache? Location and character? Intermittent or continuous? Worse at night? Scalp tenderness? Vertigo? Difficulty with sense of smell? With vision? Diplopia? Noticeable squint? Difference in vision between day and night? Trigeminal neuralgia? Facial weakness or paralysis? Deafness, unilateral or bilateral, complete or incomplete, onset sudden or gradual? Tinnitus? Difficulty with taste? Speech defect? Trouble with swallowing? Difficulty in walking? More marked at night? Tendency to stumble going upstairs? More definite ataxia in upper or lower extremities? Lightning pains? More indefinite rheumatic pains? Girdle pains? Girdle sensation? Paræsthesias in hands or feet? Gastric upsets (crises)? Constipation? Bladder trouble—difficulty in starting or completing flow of urine? Loss of sexual desire? Of sexual power (libido and potentia)? Joint trouble (Charcot)? Aphasia, transient or permanent? Paralysis partial or complete? Hemiplegia? Changes in mentality? Changes for the worse in habits and personal appearance? Disposition belligerent? Over-talkative? Delusions of grandeur? Of persecution? Hallucinations? Subjective loss of memory? Inability to concentrate? Change in writing? Tremor? Any more vague complaints referable to the nervous system? Loss of weight?

Laboratory Examinations—Were Wassermanns made at any stage? If so, where, by whom, with what result, on what dates, more especially the last? Has the spinal fluid ever been examined? What was the result?

Treatment—An accurate outline of previous treatment should be attempted. By whom administered? Local or general? What drugs? As exactly, as possible, what dates was it given? Determine preparation of drugs used, dosage, interval between doses of arsphenamine, effect of treatment on lesions, and whether treatment was intermittent, continuous, or unsystematic. (Reprint from "Abstracts from Recent Medical and Public Health Papers, issued by the Division of Venereal Diseases, U. S. Public Health Service.")

REPORT OF THE MENTAL HYGIENE SURVEY OF CINCINNATI—Conducted by the Nat. Com. for Mental Hygiene, New York City, V. V. Anderson, M.D., Associate Medical Director under the auspices of the Mental Hygiene Council of the Public Health Federation of Cincinnati, May, 1922.

The purpose of this survey was to throw light upon the mental factors involved in various social problems with which this city has to deal, to determine the frequency of mental disease and feeble-mindedness, and what bearings these conditions, as well as other mental conditions, had

upon delinquency, illegitimacy, vagrancy, prostitution, dependency, outdoor relief, unemployment, etc.

Studies were made of individuals coming in contact with the Juvenile Court, the Opportunity Farms for Boys and Girls, Hamilton County Jail, the Ohio Humane Society, the Associated Charities of Cincinnati, the United Jewish Social Agencies, the Bureau of Catholic Charities, the Home for the Friendless, the Catherine Booth Home, the Children's Home, the General Protestant Orphanage, the boarding homes for children, county and city infirmaries, and finally over 4,000 public school children.

DELINQUENCY

At the Juvenile Court it was found that approximately two-thirds of the children had intelligence quotients over 80 (intellectual retardation was not considered an important factor in their delinquent conduct); approximately two-thirds of the children, when classified from a psychiatric point of view, were found to be suffering from either psychopathic personality, epilepsy, feeble-mindedness, borderline mental defect or mental disease, or were classed as subnormal. Approximately 70 per cent of the Juvenile Court cases were found to be in homes that received the lowest scores on "parental control and supervision," and "parental conditions." The homes of the delinquent girls were more unfavorable than those of the boys. Ninety per cent of the delinquent girls came from homes that received the very lowest scores possible on "parental conditions" and "parental supervision." The mother of every fifth delinquent girl was a sex delinquent herself. Forty per cent of the fathers of the psychopathic delinquent children were alcoholic. The father of every fourth psychopathic child was guilty of non-support or family desertion.

Approximately 494 cases, of which less than half were adult offenders, 24.1 per cent were determined to be normal; 24 per cent feeble-minded; 11.6 per cent subnormal; 9.8 per cent borderline mental defect; 22.6 per cent psychopathic; 4.3 per cent psychoneurotic; and the remaining 3.7 per cent were epileptic or had endocrine disorder or mental disease.

DEPENDENCY

A group of 359 children and 1,022 other cases coming under the attention of charitable organizations, 27.1 per cent were found normal; 8.7 per cent feeble-minded; 11.4 per cent subnormal; 7.7 per cent borderline mental defect; 8.1 per cent psychopathic; 29 per cent mentally diseased; 4.6 per cent psychoneurotic; 1.7 per cent epileptic and 1.7 per cent had endocrine disorder.

PUBLIC SCHOOL CHILDREN

In order to find out what proportion of the public school children are mentally handicapped, mentally maladjusted, and hence likely to furnish us with the grist for our future juvenile and adult courts, jails, delinquent institutions, dependent institutions, unimprovable cases of dependency, unemployment, illegitimacy, and the like—a study was made of over 4,000 public school children, the idea being to get a fair picture of the average school child. Two per cent of the public school children were classified as feeble-minded. 2 per cent were cases of borderline mental defect. 3.5 per cent were diagnosed as nervous and psychopathic

children. 4.8 per cent as subnormal, 0.1 per cent were suffering from epilepsy and 0.7 per cent from endocrine disorders.

It was also found that approximately 6 per cent of the public school children showed conduct disorders.

J. C. MICHAEL.

THE LYMPHOIDOCYTE AND THE TURK CELL: THEIR HEMATOLOGICAL RELATIONSHIPS AND CLINICAL SIGNIFICANCE—J. C. Matthews and C. V. Pearson (The Lancet, London, p. 909, October 28, 1922):

An interesting discussion of these cells is presented. The technique employed in staining the films consists of (1) Jenner's stain undiluted for 2 minutes, (2) Jenner's stain diluted 1:20 with distilled water, 2 minutes, (3) Gienisa's stain diluted 1:20 with distilled water, 10 minutes; (5) blot, allow to dry in the air, no Canaca balsam or coverslip used. The advantages of this method of staining are: the staining is uniform and results can be better compared; there is clearer definition of the nucleus; there is a vigorous differentiation of the granular in the cytoplasm.

The authors present a very clear description of these cells and give a comparison with the lymphocyte the mononuclear cell, and the erythroblast. In the lymphoidocyte, the primordial mother cell, the cytoplasm forms a narrow rim around the nucleus and stains a moderately deep blue; the nucleus has a fine chromatin network, which stains much less deeply than that of the lymphocyte (leptochromatic and amblychromatic); three or more nucleoli can also be distinguished, appearing as clear, translucent oval areas near the center of the nucleus. The nuclear outline is not well defined; the adjoining cytoplasm is often less deeply stained than the periphery, a condition described in the literature as the "perinuclear halo." A small number of fine azur granules in the cytoplasm can sometimes be made out. The cell called by Turk, Reizungsform, often known as the Turk cell, has the following characteristics—somewhat variable in size, it is usually considerably larger than a red blood corpuscle, circular in shape, with a regular, well-defined outline; the cytoplasm is deep blue, occasionally vacuolated, but never containing azur granules; the nucleus is eccentric, usually circular, occasionally reniform, staining deep purplish red and showing a coarse nuclear network (trachychromatic and pachychromatic); one or two nucleoli can sometimes be made out. Very rarely one meets with Turk cells containing two discrete nuclei.

The Turk cell is considered an "irritation" or "stimulation" cell. The lymphoidocyte is the one to which all other cells can be traced back.

A very interesting series of experiments were made to determine the factors influencing the appearance of these cells in the blood. While not conclusive, yet they tend to show the lymphoidocyte is found only in diseases of the hemopoietic organs such as the leukemias. On the other hand the Turk cell appears in large numbers in most generalized bacterial infections. This fact is considered of especial value in determining whether or not an endocarditis is of the infective type, and the prognosis can more accurately be given. It is an article well worthy of careful perusal by every hematologist and internist.

H. J. LLOYD.

MUTATION OF PULMONARY SHADOWS DUE TO TYPE OF BREATHING—H. A. Bray (*Am. Jour. Roentg.*, October, 1922): The author argues against the use of a strictly pathological nomenclature in interpreting pulmonary shadows. Stereoscopic plates were made at the height of suspended costal inspiration, and again at the height of suspended diaphragmatic inspiration. The differences are then evidenced on the films by contrast. With costal type of breathing there is noticed (1) greater width of the thorax, (2) the relatively wider intercostal spaces, (3) the shorter and wider mediastinal shadow, (4) relatively higher position of the hilus shadow, (5) the "hard" appearance of certain pulmonary markings. The heart occupies relatively more of the left lung field when the plate is taken at the height of suspended diaphragmatic inspiration.

In certain instances shadows ordinarily termed "hard," and regarded by some observers as denoting fibroid and inactivity, may be converted into shadows which are "soft" and commonly interpreted as evidence of an active lesion. The reproduction illustrating the article strikingly emphasizes the differences which may occur.

T. A. PEPPARD.

A PRELIMINARY REPORT ON SOME CASES OF CONTRACTED KIDNEY—S. B. Dyke (*Quart. Jour. of Med.*, October, 1922): The basis of this report is a short series of necropsies performed by the author on some cases of contracted kidney, intensively studied from the clinical and histopathologic standpoint.

In the past, contracted kidneys have been differentiated into two main groups—secondary and primary—the former supposedly representing the end result of an inflammatory process, the latter the result of arteriosclerosis of the vasculature of the kidney.

Gaskell, in 1912, divided the latter group into two further subdivisions, the first consisting of those in which there were changes in the kidney structure, mainly atrophic, with little evidence of inflammation, with involvement of the larger arteries of the kidney, and unaffected arterioles; in fact, the vascular changes associated with senile arteriosclerosis. In the second group, the most prominent change is an intense intimal hyperplasia of the smaller arteries and arterioles, with incidental fatty change, accompanied by round-cell infiltration and other inflammatory evidences.

The two subdivisions of the primary cardiovascular kidneys are called the senile arteriosclerotic and the diffuse hyperplastic sclerotic respectively.

Photomicrographs of some of his slides illustrate very graphically the transition from the normal intima of the larger arteries to the hyperplastic degenerative intima of the smaller arterioles, indicative of the diffuse hyperplastic sclerotic kidney.

The term "senile arteriosclerotic kidney" should be very strictly applied to that group only, as of the two types of contracted kidney that is the only one showing no inflammatory reaction, and Dyke's observations proved that this type of kidney is the one unassociated with renal insufficiency and hypertension.

Differentiation between the secondary inflammatory kid-

ney and the diffuse hyperplastic sclerotic kidney was somewhat more difficult, as there was a varying ratio between the inflammatory process and the intimal hyperplasia and fatty changes in the arterioles, one or the other predominating. In both these instances chemical tests showed a progressive debasement of renal function. The writer believes that both the inflammatory and vascular changes in these instances are the common result of the action of one toxic agent, and that it is impossible, either on histological or chemical grounds, to properly subdivide them.

The report emphasizes the histo-pathological picture rather than the clinical aspects of these lesions.

F. J. HIRSCHBOECK.

SURGERY

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LIPPING FRACTURE OF LOWER ARTICULAR END OF TIBIA—B. F. Lounsberry and A. R. Metz (*Arch. Surg.*, November, 1922, p. 678): There are two types of these fractures, the anterior and the posterior. The anterior type is caused by a sudden violent overflexion of the foot. The astragalus is forced forward and upward. Its convex anterior articulation meets resistance against the concave anterior lip of the lower articular end of the tibia and an oblique fracture results.

Fracture of the posterior lip is caused by catching the heel so that the weight of the body is thrown on the foot in a position of hyperextension. The posterior lip of the tibial articulation is forced against the posterior aspect of the astragalus and a fracture, from below upward and obliquely backward, results.

In view of the difficulty encountered in reduction by manipulation and the indifferent end results obtained, Lounsberry and Metz have treated these cases by open operation. A crescentic incision is made over the internal malleolus, from a point six inches above to one over the distal end of the astragalus. The incision extends down through the periosteum to the end of the tibia. The periosteum is reflected back from the medial surface, over the crest and over the dorsal aspect. The small fragment is pushed into place and held by a Lowman clamp. A hole is drilled through the anterior fragment into the posterior regardless of which type of lipping fracture exists. A peg is cut from that portion of the tibial crest which lies within the field of operation. It is then shaped, driven into place and the ends cut flush with the tibial surface. The periosteum and skin are then sutured and a cast applied which holds the foot at a right angle and extends to the knee. In six to eight weeks the cast can be removed and hydrotherapy and massage started.

DONALD K. BACON.

PHARYNGEAL DIVERTICULUM AND ITS SURGICAL TREATMENT, WITH A RECORD OF TWO CASES—D. P. Wilkie and J. N. J. Hartley (*British Jour. Surg.*, July, 1922):

The authors open with an historical review of the subject.

From a pathological viewpoint, the condition consists of a pouch of pharyngeal mucous membrane which protrudes between the transverse and oblique fibres of the cricopharyngeus muscle in the mid-line posteriorly. It is practically always an acquired condition and may take years to develop. As the pouches increase in size, it descends and tends to be deflected to one side of the mid-line, usually the left. It passes down behind the esophagus and carotid sheath and lies between the prevertebral and pretracheal layers of cervical fascia and may eventually occupy the posterior mediastinum. The sac is usually pyriform in shape, and its pharyngeal orifice is as a rule moderately wide. The sagging down of the sac very soon brings the pharynx into alignment with it, the upper opening of the esophagus appearing as a narrow aperture on the anterior border of the neck of the sac. This explains how food and instruments first pass into the sac and it is only when this is filled that nourishment passes down the esophagus to the stomach.

Clinically, these cases show marked difficulty and incoordination in swallowing which may have existed for years. The most characteristic symptom is the regurgitation, at variable periods after meals, of unaltered food. There is also a visible swelling in the neck when the pouch is full, which vanishes as it is emptied. Roentgen-ray examination after ingestion of an opaque liquid is the most trustworthy method of confirming the diagnosis.

Relief is most readily secured by operative measures. While the one-stage operation has been tried, the authors believe that the two-step procedure is safer and likely to give a higher percentage of good results. In the first stage, the incision is made along the anterior border of the sternomastoid muscle, which is retracted laterally along with the carotid sheath and its contents. The sac is usually easily mobilized and is brought out of the neck wound after packing has been placed to aid in walling off the neck and entrance of the mediastinum so that the next step will not give rise to fatal infection. In the second operation, the neck of the sac is circularly incised until the mucosa is reached. The mucosa is then separated for a space of an inch or more and then cut across. The mucosal cuff is inverted by interrupted sutures and the muscle closed over it. A drain is inserted to the point of closure for a few days. At times a cervical fistula may result for a few days, but it usually closes spontaneously.

If the sac has been associated with an esophageal stricture, this must be treated accordingly by sounds and bougies.

DONALD K. BACON.

VARICOSE VEINS AND ULCER: METHODS OF DIAGNOSIS AND TREATMENT—John Homans (*Boston Med. and Surg. Jour.*, Aug. 17, 1922, pp. 258-266)—Homans reviews the anatomy and physiology of the venous circulation of the lower extremities. This consists of roughly parallel deep and superficial systems. The superficial system, in which varicosity occurs is without the deep fascia

and, unlike the deep vessels, has only skin and superficial fascia to support it. This system consists of the great saphenous, which drains the antero-internal surface of the leg from the foot to the saphenous opening, and the lesser saphenous draining the postero-lateral aspect from foot to popliteal space. The superficial veins are provided with 15 or 20 valves at intervals which ensure that the blood shall travel only toward the heart. There are at intervals communicating branches to the deep veins with valves facing inward. Varicose change follows phlebitis or other causes and includes fibrosis, dilatation of the vessel and incompetency of the valves, which permits back flow of blood through the saphenous and popliteal openings and communicating branches and increased hydrostatic pressure on the veins. This pressure induces stasis which reduces the nourishment to the vessel wall and overlying skin with further weakening and atrophic changes in both. The skin becomes pigmented and fibrosed and following slight trauma easily develops indolent, intractable ulcers.

Diagnosis consists of determining the points at which incompetent anastomoses with the deep system exist. If the leg be elevated to drain the veins, pressure can be applied over the saphenous opening to prevent refilling from this source as the leg is lowered. If then rapid refilling occurs, incompetent communicating branches may be diagnosed, because capillary flow requires three or four minutes to accomplish this.

Treatment may be ambulatory or operative.

Ambulatory treatment is best carried out by application of bandages covered with Unna's paste.

Operative treatment includes excision of the veins and ligation of incompetent anastomoses. This may suffice to cure small ulcers. Larger ulcers may require excision in addition, with skin grafting or transplant of pedicled flaps.

DONALD K. BACON.

REMOVAL OF INTRATHORACIC TUMORS BY THE TRANS-STERAL ROUTE—T. P. Dunhill (*British Jour. Surg.*, July, 1922):

Dunhill reports three instances in which tumors were removed through an incision that split the upper half of the sternum. The first case was one of intrathoracic fibroma and the others were substernal enlargements of the thyroid gland, all causing great difficulty in respiration.

He makes an incision which has a Kocher collar incision for the upper limb. From this, a perpendicular incision descends over the middle of the sternum to the third interspace, where it turns right or left, as the position of the tumor requires. The sternum is split and the internal mammary vessels ligated. In one case, Dunhill found it necessary to extend his intercostal incision in both directions. This permits flaps of chest wall containing the clavicle and upper three ribs to be elevated on one or both sides. This exposure permits the removal by enucleation or dissection of relatively large intrathoracic growths. The author was enabled to deliver several large thyroid tumors which could not be satisfactorily approached through the upper entrance to the thoracic cage.

Dunhill believes this method to be of superior value in the surgery of intrathoracic growths. The infiltrating, malignant growths are always of doubtful operability, but the benign, encapsulated ones which cause symptoms by

their size or through pressure can usually be partly or entirely extirpated by operation and the patient relieved. This latter class includes fibromas, lipomas, goiter, dermoid and hydatid cysts.

Aortic aneurysm must be carefully excluded before operation.

DONALD K. BACON.

THE STRAIGHT VESSELS OF THE TERMINAL ILEUM—R. L. Payne (Surg., Gyn. and Obst., 35, 4, Oct., 1922): Payne offers an observation which renders it easier for the surgeon at operation to recognize the terminal ileum without an extended search for it. This feature consists of one, two or three small blood-vessels which are found in the last one and one-half inches of the terminal ileum. They are longitudinal in direction and connect with the vessels of the cecum about the ileo-cecal valve.

Payne states that this is the only place in the entire intestinal canal where straight vessels are found as a definite and distinguishing feature, all other vessels except those in the border of the mesentery being of the circular type.

DONALD K. BACON.

GYNECOLOGY AND OBSTETRICS

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INFLUENCE OF THE TREATMENT OF SYPHILITIC PREGNANT WOMEN UPON THE INCIDENCE OF CON- GENITAL SYPHILIS.—J. Whitridge Williams (Bul. Johns Hopkins Hos., Nov., 1922): In the author's paper, "Value of the Wassermann Reaction in Obstetrics," which appeared in October, 1920, and which was based upon the study of 4,547 women whose Wassermann reaction had been determined during the four years ending December 31, 1919, the significance of the Wassermann reaction during pregnancy was considered. At this time it was shown that in this material syphilis constituted the most important single factor concerned in the causation of fetal death, and was responsible for 34.4 per cent of all deaths occurring between the period of viability and the expiration of the first two weeks of the puerperium. It was further shown that the results of treatment were highly satisfactory. When no treatment was instituted 48.5 per cent of the children manifested signs of syphilis, as contrasted with 39.2 per cent and 6.7 per cent, when the treatment was insufficient or efficient respectively.

In the two years following the completion of the series just referred to, that is, from January 1, 1920, to December 31, 1921, 96 of the women included in it have passed through 113 pregnancies in the service. Upon analyzing these, it was found that nine had ended in abortion and six in premature labor. Since in normal women at least every fifth pregnancy ends in abortion, while it cannot be categorically

stated that syphilis played no part in the production of any of the fifteen abortions or premature labors, it nevertheless seems permissible to assume that it did not. Of the 98 children remaining, four died from accidents of labor. In each instance, autopsy showed no sign of syphilis. On the other hand, four other children were born dead or died during the puerperium and showed signs of congenital syphilis, thus leaving 90 living children who were discharged from the clinic in apparently good condition.

During the months of April and May, 1922, strenuous efforts were made to locate these children. Of the 81 children which could be traced, 71 were found to be living and well, manifested no signs of syphilis, presented a negative Wassermann and were apparently in excellent condition; five more were living and apparently well but their mothers would not allow blood to be drawn for a Wassermann; one was syphilitic at the end of the third month and then lost sight of; three had died of pneumonia and one of gastroenteritis.

From these figures it is apparent that 5 or 5.3 per cent showed demonstrable evidence of syphilis, while 76 were living and well, 9 had been lost track of and 4 had died.

The cases are tabulated according to the treatment received. The figures clearly indicate that almost ideal results follow anything like efficient treatment of syphilitic pregnant women, and that surprising results may sometimes follow what would ordinarily be regarded as altogether inefficient treatment. Of the five cases of syphilitic children that occurred, in two cases the mothers had received no treatment, in two cases the treatment was notoriously insufficient, in one case a negative Wassermann was attained only shortly before the birth of the child. In all cases in which the Wassermann had been negative for three months or more after the last treatment there was no evidence of syphilis in the child.

There is abundant evidence that the syphilitic pregnant woman is unusually amenable to treatment. (Reprint from "Abstracts from Recent Medical and Public Health Papers, issued by the Division of Venereal Diseases, U. S. Public Health Service.")

SYPHILIS IN OBSTETRICS—Gammeltoft (Hospitalstidende, May 5, 1922; British Med. Jour., July 15, 1922): Gammeltoft has found that at the Regshospital in Copenhagen the frequency of syphilis in the obstetric department has risen from 3.7 per cent in 1912 to 7.7 per cent in 1921. The rise was uniform and was to a certain extent, but not entirely, due to advances in diagnostic methods. Since 1917 Wassermann's test has been carried out in every maternity case, and when it was positive a careful clinical examination almost invariably revealed other signs of syphilis. Author finds that the influence of syphilis in causing abortion has been greatly over-rated and that the subjects of syphilis do not oftener show a febrile reaction during labor than healthy women. The frequency and severity of obstetrical complications, such as nephritis and eclampsia, seemed to be little affected by the presence of syphilis. (Reprint from "Abstracts from Recent Medical and Public Health Papers, issued by the Division of Venereal Diseases, U. S. Public Health Service.")

OBSERVATIONS ON THE TREATMENT OF SYPHILIS IN PREGNANCY IN THE DEPARTMENT OF HEALTH IN DETROIT—Welz and Alfred E. Van Nest (*Amer. Jour. of Ob. and Gyn.*, Aug., 1922): Welz and Van Nest report results of work done in clinic during the year 1921. Fourteen hundred and sixty-seven new prenatal cases attended this clinic. Of 699 white women, 40 (5.7 per cent) were syphilitic. Of 768 negro women, 153 (19.3 per cent) were syphilitic. One hundred and forty-seven were cared for through pregnancy. Forty-six had adequate treatment consisting of three or more injections of neosalvarsan and eight or more injections of mercury. These gave birth to 45 living children, and one stillbirth. The remaining 101 had insufficient treatment; among these there were 26 miscarriages or stillbirths with fetal development of from 16 to 40 weeks. Five mothers who had full treatment in the first period (up to 16 weeks' pregnancy) gave birth to living children with no sign of syphilis. Nineteen who had full treatment in the second period of pregnancy, 16 to 28 weeks, all gave birth to living babies. Of 79 cord Wassermanns examined, 63 (78.7 per cent) were positive. Of the 79, 26 cases had had full treatment; in these cases 8 (30 per cent) were negative. From 53 mothers who had insufficient treatment only 8 (15 per cent) were negative. (Reprint from "Abstracts from Recent Medical and Public Health Papers, issued by the Division of Venereal Diseases, U. S. Public Health Service.")

CONGENITAL SYPHILIS AND THE ERUPTION OF THE FIRST TEETH—Ellsworth Moody (*Jour. of the Missouri State Med. Assn.*, July, 1922): Moody reports three cases of children who failed to cut all their first teeth. After anti-syphilitic treatment had been administered all the deciduous teeth had erupted. Author concludes: Congenital syphilis may be an even more important cause of failure of the first teeth to erupt than rickets and the disease may cause no changes in shape, size, arrangement, or interfere in any way with the enamel formation. (Reprint from "Abstracts from Recent Medical and Public Health Papers, issued by the Division of Venereal Diseases, U. S. Public Health Service.")

PEDIATRICS

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ROY N. ANDREWS,

MANKATO CLINIC, MANKATO

DELAYED CONGENITAL SYPHILIS—E. D. Spackman (*Lancet*, London, July 8, 1922): Spackman reports ten cases, eight of which occurred in full-grown serving soldiers whose ages range from 19 to 31 years; and two in civilians aged 16 and 17 respectively. In the eight cases there were no signs of a syphilitic breakdown until the men were engaged in the strenuous work of war. (Reprint from "Abstracts from Recent Medical and Public Health Papers, issued by the Division of Venereal Diseases, U. S. Public Health Service.")

A CLINICAL AND CHEMICAL STUDY OF BUTTER-SOUP FEEDING IN INFANTS—Alan Brown, A. M. Courtney and I. F. MacLachlan (*Amer. Jour. of Dis. of Child.*, November, 1922): The following is a working basis for the preparation of food:

BUTTER SOUP FEEDING

Butter	7¼ level teaspoons
Granulated sugar	5¼ level teaspoons
Flour	14¾ level teaspoons
Water	17½ ounces

Melt the butter in a saucepan, over the lowest possible flame, or using an asbestos mat, or until the butter stops foaming and becomes a dark color, usually taking seven minutes.

Add flour and sugar, blending thoroughly.

Add 17½ ounces of cold water and stir constantly until mixture thickens (usually taking five minutes).

Cook in double boiler for thirty minutes.

Measure and add boiled water to make 20 ounces. Normal color is light brown.

The caloric value of this butter-soup (without addition be adopted: butter-soup, 14 ounces; whole milk, 7 ounces; weighing seven pounds, the following feeding would thus be adopted: butter soup, 14 ounces; whole milk, 7 ounces; 7 feedings. The caloric value of this mixture is approximately 24 to the ounce.

When the stools tended to be loose, the sugar was omitted and ½ to 1 ounce of casein flour was added.

The use of butter-flour mixture for very young and very small infants was generally attended by rapid and uniform weight gain, improvement in vigor, in tissue turgor, in disposition and in resistance to infection. Extraordinarily good results were obtained with many infants suffering from atrophy. It is not indicated, however, for children with diarrhea or other forms of severe fat or carbohydrate intolerance. The caloric intake with this form of food was unusually high, averaging approximately 70 calories per pound. In some cases signs of mild rickets, or a condition simulating mild rickets, were seen after continued use of butter-soup. No edema was encountered. If the weight became stationary after long continued use of butter-soup, the addition of protein to the food or temporary feeding with a cow's milk dilution was sufficient to bring about a continuation of the rapid weight gain. The stools with this food were acid, strongly resembling those with breast milk feeding, but were much larger. Like breast milk feces they contained a high per cent of fat. There was generally a poor retention of fat and sometimes a poor retention of nitrogen and of total salts, especially by the older children. There was usually a fair retention of calcium. Sodium chlorid was not retained in abnormal amounts. The feces contained an excess of inorganic bases over inorganic acids, and the urine showed the reverse condition. The excess of bases in the feces was not to be accounted for by the quantity of fat excreted as soap, but apparently indicated the presence of lower acids. Undoubtedly, butter-flour mixture is a valuable addition to our resources in the feeding of premature, small and undernourished infants who are not suffering from any acute digestive disturbance.

R. N. ANDREWS.

DETAILS IN INFANT FEEDING—James M. Moser (Arch. of Ped., July, 1922): In no type of cases is neglect of attention to details more provocative of the habit of changing physicians than in the difficult feeding cases of infants. Time and again we see these youngsters carried from one doctor to another, the last man getting results with practically the same formula as given by the first, because he paid attention to facts about the preparation or giving of the formula which the first had overlooked.

Household books on infant feeding should be omitted from the nursery. These books usually work well for normal infants, but when the mother undertakes to feed a difficult case with such formulas, the results are often disastrous. Is it not time we ceased feeding the baby by any book method, but give him instead what his symptoms and signs show that he needs?

It is quite necessary in puzzling cases to eliminate in some way the grandmother from the equation. In many instances failure has resulted because the attending physician has allowed the baby to remain in the same house with the mother and other devoted relatives, even though a nurse was in charge.

If the visits to a difficult case have to be restricted in time, they had better not be made at all. Neither should the frequency of visits be limited. Such a case cannot be fed hurriedly but requires painstaking attention. Formulas and directions should never be given over a telephone. New-born infants should receive immediately 1 to 2 ounces of boiled water every 4 hours until the third day, when they should be started on modified milk, if sufficient breast milk is not supplied by that time. Inanition fever is often thus avoided.

Constipation in a breast-fed infant is quite common and nearly always overtreated. If the movements are soft, well-digested and the baby is happy and contented, there is no more reason why he should be tortured to make him have a movement every 24 hours than there is in an adult in similar condition. The youngster may go 48 hours without being harmed in the least thereby. It is important to instruct the mother as to the necessity and purpose of giving fruit juices, particularly in bottled babies. They should be informed it is not alone for the bowels, but for the infant's general condition. A very frequent mistake is made in attempting to give a certain baby the amount at each feeding of his supposed stomach capacity. A marasmic infant may require double the ordinary amount. The writer has attended 2 cases with infants 2 months old, of average size, who required 8 and often 9 ounces at a feeding. Nipples should be so fixed that baby can get all of its food in not more than 20 minutes. Many of these infants, particularly those of premature birth, become exhausted and fall asleep if they are required to nurse longer than 5 or 10 minutes.

A personal supervision occasionally of the preparation of the formula in the home by the attending physician would go a long way toward eliminating many errors. The whole question of success in infant feeding rests upon three factors—co-operation, close observation and common sense. The greatest of these is common sense.

R. N. ANDREWS.

INDICATIONS FOR TONSILLECTOMY IN INFANCY AND CHILDHOOD. IS THE MODERN TENDENCY TOWARD UNIVERSAL TONSILLECTOMY JUSTIFIED?

—Henry Heiman (Amer. Jour. of Dis. of Child., September, 1922): During the past few years there has been engendered in the minds of medical men an unfounded spirit of antagonism toward the faucial tonsils. The pendulum has been swinging toward extreme radicalism. Tonsillectomy is quite a major operation. Its risks are very definite. The indiscriminate removal of the tonsils should be condemned. A careful sifting of the material and critical observation of cases cannot but lead one to the conviction that the tonsils have a definite function to perform. The anatomy of the organs shows that they are practically aggregations of lymph nodes covered by epithelium. Like other lymph nodes the tonsils exercise a protective function. They act as a sieve against microbic invasion. The posterior pharyngeal wall, the postnasal space and the intestinal wall contain innumerable lymph follicles similar to those of the tonsil. If this type of structure is especially susceptible as a portal of entry, of what avail would be the removal of the tonsils.

In instances, however, the tonsils may cease to function and become "choked filters," in which cases they may be a source of infection, and the tonsils should be sacrificed. The rôle played by the tonsils in the production of lymphocytes has been conclusively demonstrated by Wood. He regards this as a most important function. Tonsils have a rôle to play in the lubrication of the food, as well as of the throat during the act of speaking and singing. Changes in the speaking and singing voice after removal of the tonsils have been noticed.

The most important symptoms of the obstructive cases have been mouth breathing, clogged nasal passages and snoring at night. There has been a great difference of opinion and of statistics regarding the relation of tonsilitis to articular rheumatism and cardiac diseases. St. Lawrence has presented very favorable results from tonsillectomy in rheumatic and cardiac cases. The author cannot but feel that in these cases the careful medical and social service attention they received played a considerable part in producing the improvement noted.

In conclusion he urges the co-operation of the medical forces to banish the passionate desire, which is fast gaining ground, to remove every tonsil, and to substitute more conservative and rational principles.

R. N. ANDREWS.

ACUTE INFECTIONS OF THE URINARY TRACT IN INFANTS AND CHILDREN SUBSIDING WITHOUT THE APPEARANCE OF PUS IN THE URINE—Walter R. Ramsey (Amer. Jour. of Dis. of Child., September, 1922): The one characteristic symptom is a sudden onset with high fever, frequently as high as 105 or 106 F. There is often no other symptom and the child does not seem to be sick enough to correspond to the degree of fever present. In other cases, the symptoms are severe, especially in the spasmophilic child. If there is irritation of the bladder or urethra and symptoms are necessarily aggravated.

It is generally conceded that the diagnosis must finally be decided by the microscope. The generally recognized examinations in urine are as follows: (1) a catheterized

specimen in a female; (2) a cleansed meatus; (3) urine immediately examined. In an uncentrifuged specimen, low power, if colon bacilli in numbers, and pus cells to exceed ten to the field are present, a diagnosis of cystitis or pyelocystitis is conceded. The author contends that the appearance of pus cells above a point considered normal is not necessary to establish a diagnosis of an acute infection of the urinary tract. In 1910 he pointed out that colon bacilli in great numbers in fresh acid urine was accompanied with characteristic symptoms of fever, etc., without the appearance of pus, and in 1914 he came to the conclusion that in many acute infections of the urinary tract no pus is ever found, the urine containing only bacilli and epithelial cells. He has repeatedly noticed that after the acute onset of a colon bacillus infection of the urinary tract, with the characteristic high fever, the urine, although acid and containing myriads of colon bacilli, remains free from pus for several days, after which pus cells begin to appear in increasing numbers. In other cases, the characteristic symptoms and fever subside after a brief period and the colon bacilli gradually disappear without the appearance of pus in the urine.

He believes that many heretofore obscure fevers in infants and children are produced by infections with the colon bacillus, these infections may be local or perhaps systemic, and that they may be diagnosed by the characteristic general symptoms and by the elimination of an increased number of colon bacilli in the urine.

R. N. ANDREWS.

INTRAPERITONEAL INJECTIONS IN INFANCY—Graeme Mitchell (Arch. of Ped., May, 1922). When one realizes the frequency with which fluid is indicated in certain diseased conditions and the disadvantages of previously existing methods of furnishing fluid in those conditions, it is not surprising to find that the intraperitoneal injection of fluid is now widely used. The giving of fluid by mouth is often useless because vomiting causes its expulsion. When introduced by rectum, fluid will not be retained if diarrhea is present. Hypodermoclysis is a painful procedure and the amount of fluid administered is limited. Large amounts of fluid may be given in the peritoneal cavity. As much as 300 or 400 c.c. may be introduced and is quickly absorbed. These injections may be repeated as often as every eight hours if necessary.

Is there any risk of the needle entering the intestinal lumen and causing peritonitis? It has been repeatedly shown in animals that it is very difficult to injure the gut unless greatly disturbed. It has been found that after recent operations on the abdomen, intraperitoneal injections should not be given as they may interfere with the healing of the incision.

Intraperitoneal injections are indicated in any condition which is accompanied by dehydration. Clinically, anhydremia is readily recognized by the shrunken condition of the patient, the depressed fontanel and the dry relaxed skin. If dehydration is present, fluid must be supplied by a method which permits the administration of large amounts of fluid which will be quickly absorbed. This is accomplished by intraperitoneal injection. If sufficient amount

of fluid is furnished, acidosis will be prevented, or, if present, may be relieved. The best results obtained have been by the use of the simple sodium chloride solution. With this there is less tendency to abdominal distention. As long as dehydration exists, fluid may be injected into the peritoneal cavity.

The Technic of Intraperitoneal Injections. After having ascertained that the bladder is empty and that there is no distention, the abdomen is painted with tincture of iodine. Salt solution at temperature of 100° is put into a graduated container. To this container is attached an 18 gauge needle having a point beveled at about 45°. The skin of the abdomen in the midline about one-third of the way from the umbilicus to the pubis is elevated with the left hand, while the right hand plunges the needle through the abdominal wall. The needle should be pointed in an upward direction and should be inserted just through the abdominal wall. When slight abdominal distention occurs the needle is withdrawn and a sterile dressing applied.

R. N. ANDREWS.

HABITUAL VOMITING IN INFANTS—Epstein, Berlin (Arch. of Ped., 1922). The author comments upon the peculiarly large air content of the infant stomach, both with breast and bottle feeding. Another feature is the lack of ability to contract the stomach concentrically around the food. The peristole seems to be a reflex function and there seems to be some parallel between the size of the air bubble and this peristolic function. For these and other reasons he gives a more solid gruel instead of the usual fluid food in case of habitual vomiting. This seems to elicit the peristole reflex, and thus expels the air. Even a small amount of a more consistent food, immediately before the ordinary feeding, starts this reflex as a conditional reflex. Two or three teaspoonfuls of a thickish gruel are given five minutes before the feeding. In nine of the thirty-six children thus treated the vomiting ceased at once; in twenty-two the vomiting gradually subsided in the course of from 3 to 10 days. In two of the cases no effect was apparent and atropin was given. The children gained because of their ability to retain their nourishment. In conclusion he states that this peristolic functioning of the stomach is not the only factor, in habitual vomiting; the diaphragm may be involved, but this treatment is certainly worth while.

R. N. ANDREWS.

THE INHERITANCE OF SYPHILIS—Palacio and Moral (Semarra Medica, Buenos Aires, April 20, 1922; Jour. Amer. Med. Assn., July 15, 1922): Palacio and Moral ascribe the transmission of syphilis to the mother; only through the dystrophia of the spermatozoa does the father affect the child. When the mother is affected the child is always affected. Latent tertiary syphilis in both parents indicates dystrophia of the reproductive elements, but the disease is liable to flare up under the influence of gestation, in which case the child is liable to have congenital infection as well. (Reprint from "Abstracts from Recent Medical and Public Health Papers, issued by the Division of Venereal Diseases, U. S. Public Health Service.")

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ORIGINAL ARTICLES

PRACTICAL APPLICATION OF LOCAL ANESTHESIA TO MAJOR SURGERY*

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Volumes have been written upon the advantages of local over general anesthesia and it is yet an undecided question as to the relative merits of each. We may accept as a fact, I think, the statement that the use of local anesthesia is markedly on the increase and that its qualifications are being tested out in many clinics in which it was practically never used before, and that those who had previously used the method have, in numerous instances, greatly broadened its application in their work. The more extensive trial of local anesthesia cannot fail to bring about certain results.

As the application of the method broadens there will naturally develop a better knowledge of the manner in which it should be applied. This will have the effect of demonstrating such merit as it may possess and thus the relative position which the method is to occupy will more readily become apparent.

Assuming that the trend of the times, surgically speaking, is toward the more extended use of local anesthesia (it is the writer's belief from such observation as he has been able to make that most surgeons now use it as a matter of preference in cases in which they can carry out surgical procedures efficiently under its influence), it would seem that one of the most important factors for consideration is the actual technic of its administration and, more particularly, the technic of performing surgical operations when using this method.

With regard to the method of administering local anesthesia, two procedures, broadly speaking, present themselves. They are *regional* or *conduc-*

tion anesthesia and *direct infiltration*. Each method has its advocates as well as its special points of excellence. Certain nerve trunks such as the trigeminus, the brachial, and the intercostals present a most excellent opportunity for the application of regional anesthesia. Again, other regions of the body which do not lend themselves so readily to the use of regional anesthesia may seem more favorable fields for the use of infiltration or "infiltration block." All regions which are devoid of definite landmarks which make it possible to reduce the margin of error to the minimum should, in the writer's opinion, be anesthetized by means of infiltration or infiltration block. Aside from such examples as those mentioned above, most regions of the body do not present the ideal characteristics in which regional anesthesia may be carried out with ease.

Infiltration block, which in its universal application places fewer restrictions upon the surgeon, is indicated only when direct infiltration is contraindicated. That is, when for some reason one wishes to avoid injecting the solution directly into the field which is to be incised. The presence of infection, malignant disease, or conditions in which the field of operation might be obscured by making direct infiltration into the tissues are the common conditions which contraindicate direct infiltration.

Eliminating the regions in which conduction anesthesia is indicated, such as the branches of the fifth nerve, the intercostal, the brachial and cervical plexuses and, to a lesser degree, the individual nerves of the extremities, in addition to the locations and conditions calling for infiltration block, there still remains, in the writer's opinion, an extensive field for the use of direct infiltration.

Its use is almost universally demanded in all instances in which the establishment of regional anesthesia has, for instance, been incomplete. At the present time the percentage of cases in which this condition obtains is so high that, with few exceptions, reinforcement of the anesthesia may

*Presented before the Minnesota State Medical Association, Minneapolis, October 13, 1922.

be called for at any time during an operation and for this reason alone the writer feels that it will be some time before it will be found practicable for one individual to administer local anesthesia to a patient and pass him on to the surgeon for the performance of an operation. At present this plan can be carried out with success in only a comparatively small percentage of cases. And while this method has at once considerable appeal, an analysis of the question involved will show many reasons why it will probably be slow of adoption.

As stated above there are at present but comparatively few regions in which it is actually possible for the local anesthetist to prepare a patient for the complete carrying out of a surgical procedure. Again, while it is true that local anesthesia is at present comparatively safe when properly used, it is yet advisable to employ it in as small quantities as are compatible with the demands of each case. It is apparent that one must use larger amounts when attempting to completely anesthetize a patient before an operation is begun, than when following the opposite plan which allows one to introduce but a minimum amount of the solution and reinforce the anesthesia at any time throughout the progress of the operation, provided this reinforcement should become necessary.

Likewise there are many types of operations in which it is of great advantage to expose certain deep-seated fields before attempting their anesthetization. In intraperitoneal work demanding the use of anterior splanchnic anesthesia this method is most urgently demanded. Furthermore, in a certain percentage of cases it may be impossible to complete an operation under the time limit demanded by the preliminary anesthetization of the tissues and reinforcement may become necessary during the later stages of the operation. Here, especially, the demand that the operator be his own anesthetist is most urgent.

One hears a great deal at this time concerning the question of psychic incompatibility. While it is the writer's belief that objection to the use of local anesthesia on this ground is greatly overestimated, and that with the advent of painless operations under local anesthesia it will gradually disappear, it would seem that for the present, at least, the confidence of the patient would be best secured by the surgeon himself administering the anesthetic because it is the surgeon above all

others in whom the patient naturally has the greatest confidence.

The objections offered to the plan are mainly that the surgeon is generally absorbed entirely with the details of the operation and should not be handicapped by the additional burden which is placed upon him by the administration of the anesthetic, and that the time required to prepare himself for this work is too great. Again, that the administration of local anesthesia is time-consuming and irksome. With regard to the first objection, it may be said that there are few surgeons who are not most intimately engaged in keeping an eye on the administration of the anesthetic in every operation which they perform. It is a detail intimately connected with the daily routine of the surgeon and few conscientious surgeons find themselves able to avoid this responsibility. Secondly, the additional time required in learning to administer local anesthesia and the irksomeness connected therewith will depend largely upon two factors: (1) equipment; and (2) the method of inducing anesthesia.

The irksomeness has been greatly reduced by the improvement in the equipment. During recent years numerous syringes of most excellent design have been developed. The self-filling feature is of decided advantage. The writer has employed the Pneumatic Injector for over a dozen years and as one of the adjuncts of local anesthesia it ranks among the first in usefulness. To those who are unfamiliar with its use and advantages it may seem complicated but such is not the case. In fact, nitrous oxide machines may be said to be more complicated than this apparatus. The presence in the surgeon's hand of a solution of novocain under constant graduated pressure, with the cutoff as a control, makes the induction of local anesthesia a pleasure and reduces to a minimum the margin of error in covering the field with the solution.

The type of needles has also been greatly improved and one may now obtain needles of any desired calibre and length. A former constant source of trouble related to the adjustment of a needle to the syringe. This was usually a slow process making it difficult to exchange needles without delay and leakage was common. These factors have been overcome and so mark a great advance in the technic of the induction of local anesthesia.

The fact that our patients are conscious when operating under local anesthesia makes it essential that our equipment for this work be of the most excellent that it is possible to obtain. A smooth working machine with highly developed teamwork and the avoidance of all unnecessary "fussing" while preparing the patient for the induction of anesthesia will go far toward removing the handicap under which the surgeon now finds himself when using this method. It is for this reason that the most simple methods available should be used in every instance in which they are not contraindicated. The preparation of two fields, one for the purpose of introducing the anesthetic outside of the field of operation as is demanded by paravertebral anesthesia, for instance, should be avoided whenever possible. Also, pain during the induction of anesthesia should be brought to the irreducible minimum.

Thus while regional anesthesia is theoretically most ideal, the bulk of surgical operations are performed in the localities which do not easily lend themselves to this method.

It is significant that those who developed and warmly advocated regional anesthesia have gradually narrowed its field and now employ either infiltration block close to the field of operation or, indeed, use direct infiltration in a fair percentage of cases. Thus we find in the most recent monograph appearing on the subject of regional anesthesia, that infiltration "field" block has largely substituted paravertebral anesthesia for abdominal work, whereas the same author two years earlier was a staunch advocate of paravertebral anesthesia.

The same author we find recommends direct infiltration in conjunction with regional anesthesia in anesthetizing for thyroidectomy, and even direct infiltration is recommended in the case of cholecystostomy and cesarean section.

To the less expert, to the general surgeon whose experience with local anesthesia is comparatively limited, to the younger surgeon who is developing the technic of local anesthesia, the method of infiltration anesthesia will make a much stronger appeal than will the various forms of regional anesthesia in the class of cases designated.

The writer can, perhaps, best illustrate his reasons for taking this position by referring to a concrete example. Take, for instance, the anesthetization of the abdominal wall at the linea

alba, above the navel; "field block" (LaBat) or what we have chosen to call infiltration block, demands infiltration anesthesia along the edge of the rectus on each side and, in addition, a bilateral infiltration along the costal border. The introduction of the solution will, it must be remembered, be made at a point where the nerve bundles have not become subdivided and the carrying out of this infiltration must invariably be associated with needle-point contact with one or more of the thoracic nerves. It is well known that contact with those nerves results in a reaction extremely unpleasant to the patient. Again, should the solution fail to saturate any one of these nerve bundles completely, the area supplied by the branches arising from this bundle will retain sensation. Obviously this area will be much greater at the line of incision than at the point where the attempt to anesthetize has been made. This factor is responsible for a considerable margin of error in the method.

The next point relates to the amount of solution introduced. As stated above, it is desirable to reduce the amount of solution to a minimum compatible with obtaining satisfactory anesthesia. It may be said that the amount of anesthesia per cubic centimeter is approximately the same whether making direct infiltration or infiltration block. One must, therefore, in making the latter, necessarily use twice the amount of solution used in making direct infiltration. Furthermore, we must take into account the fact that in the case of infiltration block the total amount of the solution must remain in the patient's body and be absorbed, whereas, in the direct infiltration a considerable percentage of the solution escapes when the injection is made.

There are still other factors which might be mentioned in comparison. While not so important, the element of time and labor differs in the proportion of about three to one because, other things being equal, it requires a certain definite period in which to cover a specified area. The possibility of producing painful sensations is increased not only on account of the relative size of the nerves in these locations but on account of the greater size of the area which must be infiltrated.

It is well known that the less the diameter of the nerve fibers the more quickly and certainly will the solution saturate them. It is perfectly

obvious, therefore, that the direct infiltration meeting as it does the ultimate arborization of the nerve filaments offers the opportunity for obtaining a maximum intensity of anesthesia.

There are, however, two important advantages claimed for the indirect method which must be disposed of before direct infiltration can be accepted, notwithstanding its unmistakable advantages, some of which are detailed above. One of these is the inadvisability of injecting novocain solutions directly into the line of incision. The other is that infiltration block anesthetizes a broad area of the abdominal wall, thus giving greater relaxation of the parietes. There is no truer saying than "the proof of the pudding is in the eating." The writer has injected isotonic solutions of novocain along the line of incision many thousands of times. Crile of Cleveland carries out the same procedure thousands of times yearly. Other surgeons throughout the world make a constant practice of this procedure. Is it possible to assume that those of us who are daily making these direct infiltrations are having defective healing of our wounds? The writer has in innumerable instances, in performing dual operations, infiltrated one side and used the other as a control. So far no authoritative evidence has been presented that the vitality or healing powers of the tissues have been reduced in the slightest degree on account of the presence of novocain solution.

The continuation of the presentation of this argument represents the stubborn adherence to a fallacy based on theoretical grounds which experience has most thoroughly contradicted. As a matter of fact, when the time has arrived for the closure of the incision the solution has, as a rule, entirely disappeared from the tissues, leaving only a portion of the novocain in combination with the nerve cells, which combination produces an inert substance. Obviously, if the presence of novocain in the nerve tissues produces an inhibitory effect upon the healing processes this influence would be as active in the case of regional as in the direct infiltration anesthesia.

The next objection to direct infiltration relates to the relaxation of the abdominal muscles and here again experience with the two methods controverts most completely the hypothesis advanced by the advocates of regional anesthesia. An infiltration along the line of incision will, provided it is properly carried out, produce a relaxation

fully as complete as will even paravertebral anesthesia. It is simply a question of sufficiently widely infiltrating the peritoneal tissues. In many instances this wide anesthetization is not necessary. The type of surgical procedure required will indicate its extent. For practical purposes it should be made approximately 5 cm. in width before the incision is completed. After opening the abdomen its width may be increased ad libitum directly under the vision. This effectually eliminates reflex response to traumatization provided the intraperitoneal work is carried out with proper finesse. Here again it may be said that "the proof of the pudding is in the eating." The literature shows that it is those who advocate regional anesthesia in abdominal work who are most prone to admit the necessity of employing general or intraspinal anesthesia in abdominal surgery.

In the writer's experience over ninety per cent of abdominal cases which have presented themselves at his clinic during the past seven years have been operated upon without using general anesthesia as an adjunct, and of these not more than fifteen per cent could have been classed as in any degree unsatisfactory, either from the standpoint of pain to the patient, or embarrassment to the surgeon, in the carrying out of an operation.

In conclusion the writer wishes to once more accentuate the necessity for simplicity of methods, the improvement in equipment and the development of surgical strategy which is demanded by the use of local anesthesia by those who essay to use the method.

THE USE OF THE DELAYED FLAP IN SECONDARY OPERATIONS ON THE PALATE AND ANTRUM*

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The greater number of patients with cleft palates who are operated on at the proper age obtain a complete closure and good functional results. Occasionally, however, partial failures occur even under the most favorable conditions. But many of the larger postoperative openings are due to the operator's lack of knowledge of the principles of

*Read before the Southern Minnesota Medical Society, Mankato, Minnesota, December, 1922.

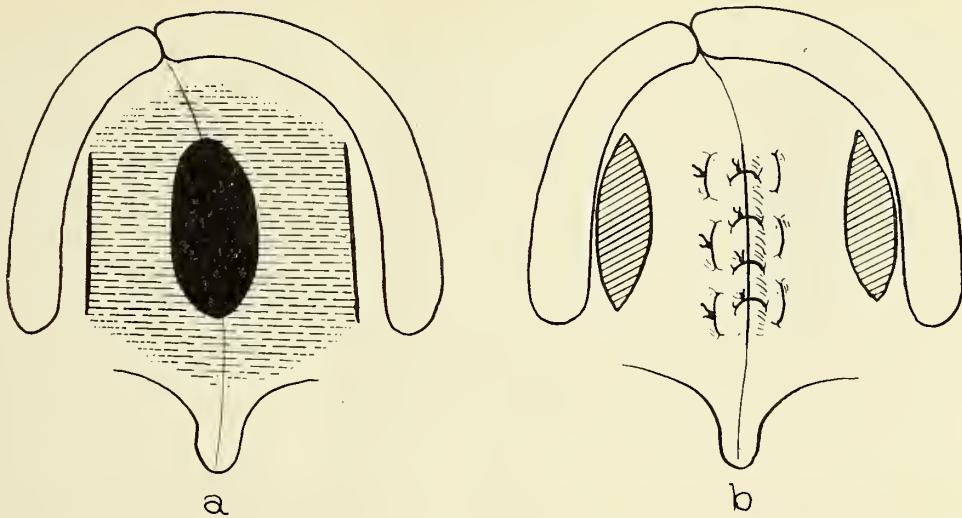


Fig. 1, a and b. In small openings with little scarring, the mucoperiosteum around the opening may be freed laterally, and the opening closed by means of lateral incisions and mattress sutures. The objection to this method is that the scarring around the opening is sometimes so marked and the tissue so inelastic that the mesial margins are brought together under slight tension and sometimes sloughing results.

cleft palate surgery. Such openings are usually in the hard palate or at the juncture of the hard and soft palates, and are sometimes closed with difficulty, depending on the size, location, and the amount of scarring present. It is in these post-operative, and the wide cleft palate cases, many of them double, that doubt arises as to the best procedure to follow, and in which I have found the use of the delayed flap so satisfactory.

It is best to wait at least three months after the first operation before attempting a second, as

operations attempted immediately after the primary operation usually result in failure. In closing postoperative openings of the palate, tissue may be obtained from the palate itself or from other tissue, such as that of the cheek or the neck. In utilizing tissue from the palate, three types of flaps may be used. In the case of the small openings with little scarring (Fig. 1, a and b), the mucoperiosteum around the opening may be freed laterally, and the opening closed by means of lateral incisions and mattress sutures. The ob-

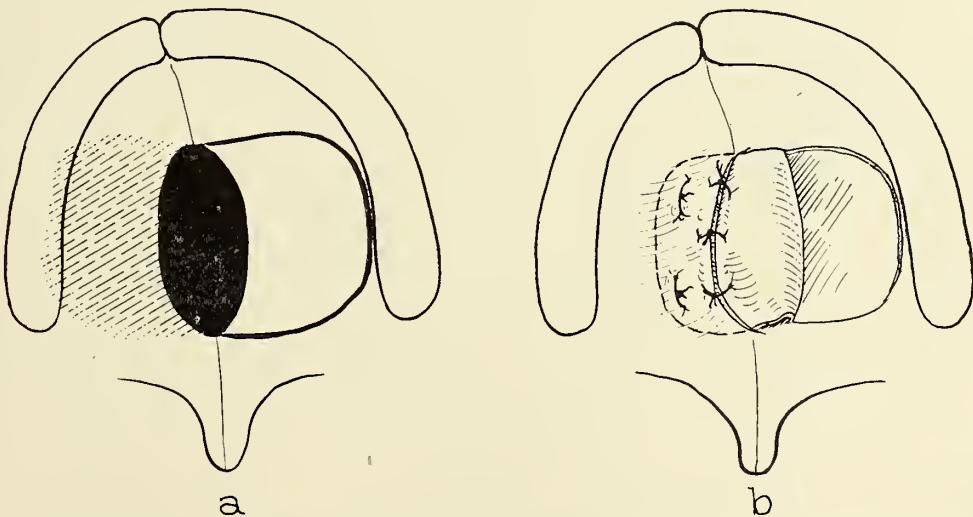


Fig. 2, a and b. Illustrate the closure of a postoperative opening in the palate by means of a flap with a pedicle along the mesial margin of the opening. The flap is turned hingelike and sutured underneath the freed-up margin on the opposite side of the palate. The scarred margins of the opening, however, make very poor tissue for a pedicle, especially when the flap is turned over on itself.

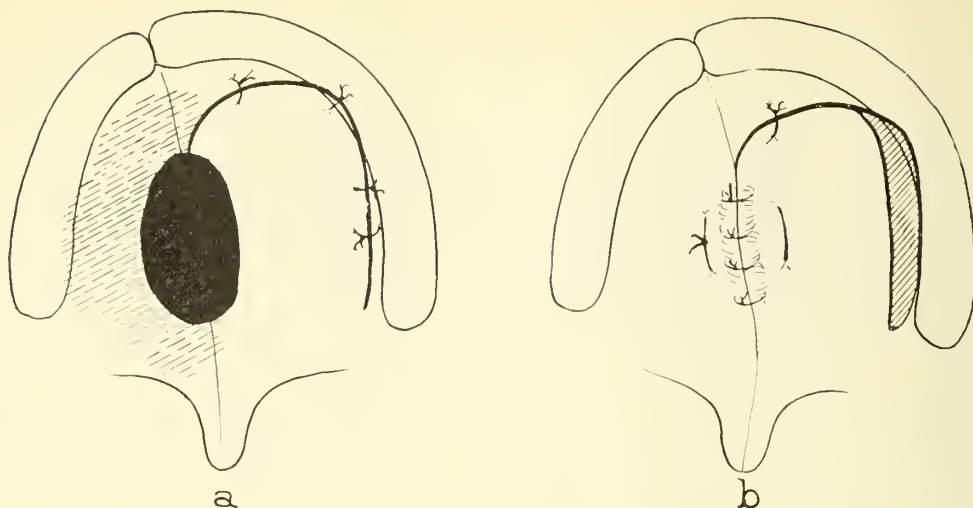


Fig. 3. The closure of a postoperative opening of a palate by means of a delayed flap with pedicle posteriorly. a. The flap has been elevated and sutured back in place; at the same time the opposite side of the palate is freed up. In a week the flap is again elevated, the mesial margins are pared, and then sutured together as shown in Fig. b.

jection to this method is that the scarring around the opening is sometimes so marked and the tissue so inelastic that the mesial margins are brought together under slight tension, and sometimes sloughing results. In other cases (Fig. 2), closure may be obtained by making a flap with a pedicle along the margin of the postoperative opening, turning it completely over, hinge-like, and suturing it underneath the freed-up margin of the opposite side of the opening, as described by Lane. The scarred margins of the opening, however, make very poor

tissue for a pedicle, especially when the flap is turned over on itself.

The Davis-Colley method is similar to Lane's. Flaps are obtained from each side of the palate. One flap has the pedicle along the mesial margin of the opening and is turned over, hinge-like. The other is long and narrow with the pedicle posterior. It is sutured over the other flap with the mucous membrane towards the mouth. The third method has been the use of a pedicle flap, with the pedicle posteriorly on the palate, brought across in a one-

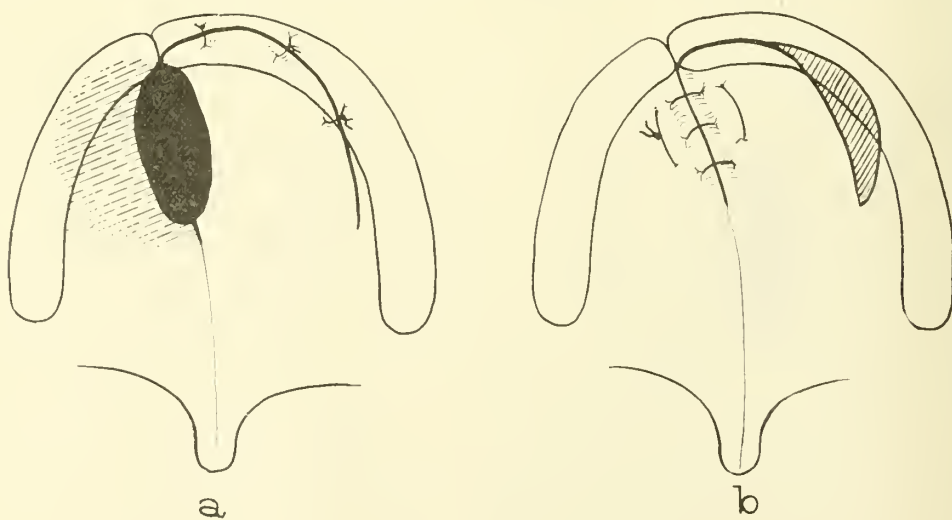


Fig. 4. The closure of a postoperative opening in the anterior part of the palate by means of a delayed flap. a. Shows the flap which has been elevated and sutured in place, at the same time the opposite side of the palate is freed up. In a week the flaps are again elevated and brought together over the opening, b.

stage operation with a mucous membrane surface towards the mouth.

The method which I have found most successful in the closure of both the large and the small openings is the application to cleft palate surgery of the principles employed in using the delayed flap in plastic surgery of the face and neck. It probably is not a new method as applied to the palate, although I have not seen anyone use it, nor have I seen it described in the literature. In bringing down a flap from the forehead to fill in an opening in the nose, or in using a flap from the back to replace scarring of the anterior part of the neck, I

have found that it is best to raise the flap and then suture it directly back in place, leaving it for a week or ten days before transferring it to the area where it is to be employed. In this manner, the blood supply of the flap is insured and the flap also thickens. For cosmetic reasons, in closing openings around the nose or cheek, it is essential that the flap shall have skin on both sides. This is not necessary in closing openings of the palate, or the antrum in the mouth.

The same principles are applied to the closure of difficult postoperative openings in the palate. The flap is outlined on one side of the opening

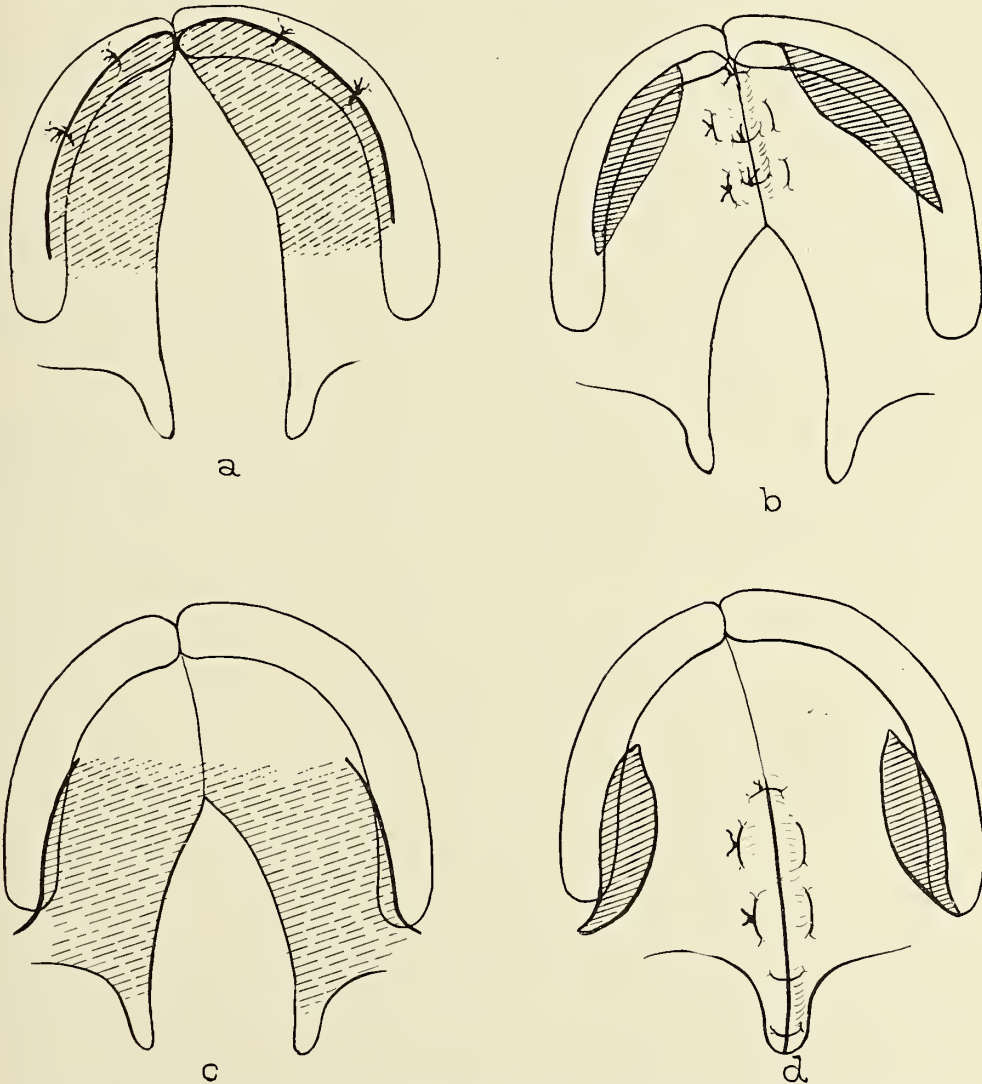


Fig. 5. The closure of a postoperative palate in which the opening is too wide and there is too much scarring for the usual Langenbeck operation. a. Flaps are elevated from either side of the anterior part of the palate and sutured back in place. The aponeurosis of the palate is not freed up at this time. b. The closure of the anterior part of the palate is completed one week later. c. Three months later the first stage of the second operation at which time the posterior part of the palate and the soft palate is freed up by lateral incisions, and after waiting a week the mesial margins of the flaps are pared and the palate closed in the usual manner.

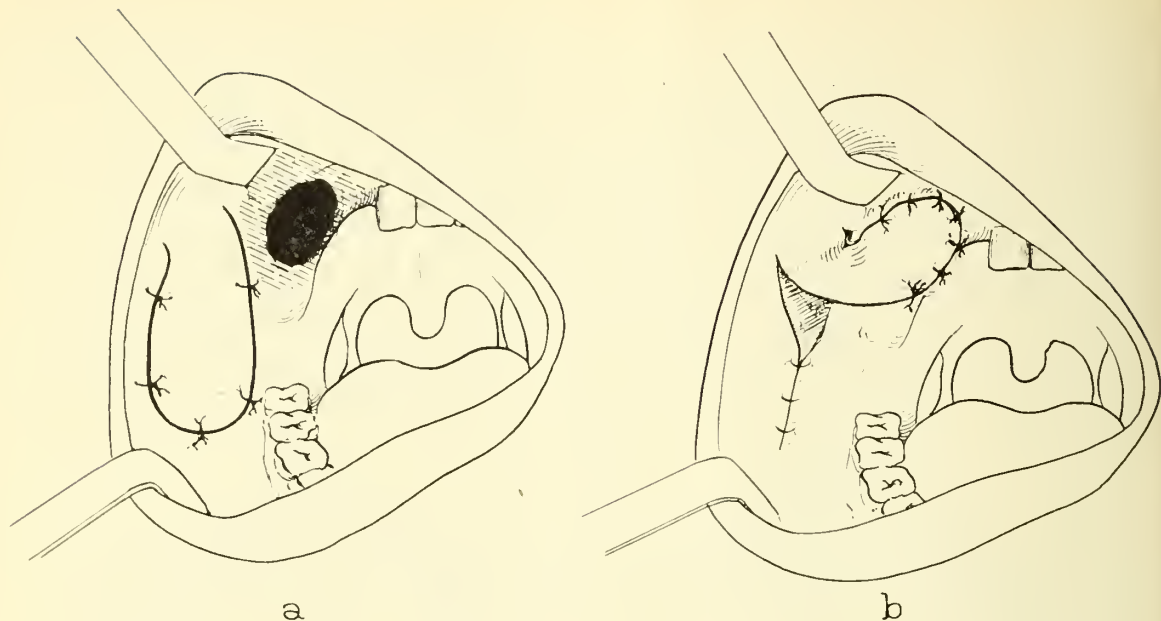


Fig. 6, a and b. Illustrate the closure of a postoperative opening in the antrum. The flap is elevated from the right cheek and sutured back in place. At the same time the mucoperiosteum about the opening of the antrum is freed up. In a week's time the flap is sutured in place around the opening as shown in Fig. b.

with the pedicle posterior, and then elevated and placed back in its original bed. At the same time, the opposite side of the opening is elevated from its mesial margin and allowed to fall back (Figs. 3 and 4). A suture or two may be employed to hold the anterior extremity of the flap in the correct position. In a week's time the flap is again elevated, the mesial margin trimmed and sutured across the opening to the freshened and elevated margin of the opposite side. During the week of the delay the blood supply to the flap is improved a great deal and the flap becomes thicker. In the second stage, minute areas of slough, if present, are trimmed off as the margins are freshened.

In case the original opening is very large, or the postoperative complete cleft palate is very wide, with marked scarring, the closure may have to be accomplished in two stages (Fig. 5). That is, the anterior part of the palate may be closed by delayed flaps from each side in the first stage. The aponeurosis of the palate is not freed at this time. Three months later the closure is completed by the two-stage Langenbeck operation.

Brophy has recommended the extraction of the deciduous molar teeth, allowing the sockets to heal, and then by lateral incisions in the cheek, getting a greater quantity of tissue to slide across the opening in the palate.

Monnier recommends the use of the two-stage

operations for all cleft palate cases, waiting five days to a week after the elevation of the flaps before suturing them.

Blair has recommended elevating the palate from lateral incisions, leaving the mesial margin of the palate intact and then packing these pockets with 10 per cent solution of colloidal silver gauze for a few days before completing the elevation, and suturing. He has obtained very satisfactory results in these difficult cases by this method.

Lane also performs the operation which he has described, in two stages. Blaisus, Thiersch, and Rotter have used flaps from the neck brought into the mouth to close openings in the palate where tissue from the palate was not sufficient to close the opening.

In closing postoperative openings in the antrum following osteomyelitis of the jaw, the removal of malignant growths, or a Denker operation, the same procedure is employed (Figs. 6 and 7). The flap is elevated from the inside of the cheek with the pedicle high and is then sutured back in place. At the same time the margins of the opening are freed. After a week, the flap is sutured in place around the opening. The pedicle may have to be cut in a week or ten days and replaced to the cheek, although this may not be necessary if the base is close to the opening.

CONCLUSIONS

The results of this method of closure of post-operative openings in the palate and antrum have been much more satisfactory than any other method that I have used. Cases of cleft palate which I formerly felt were better taken care of by means of a plate, and cases in which mucoperiosteum is very thin, may be closed by the delayed flap. I do not mean that all cleft palate cases are made operable by this method, but it has added to the operable group many cases that were not benefited by previous operative procedures.

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DISCUSSION

DR. H. P. RITCHIE, St. Paul: I think this is a most important communication as it deals with what I feel is a most debatable field as to procedure, and the most difficult one of accomplishment of any reconstructive work in the body. I am a great admirer of Doctor New's work and also am familiar with the literature and can support his statement that this is a new proposition in regard to this work. The delayed flap has become an established thing in plastic surgery elsewhere and I believe it can be used in this locality. The work and teaching of Gillis, of England, Blair and Davis indicate that along lines of plastic surgery we have the greatest chance for improvement. I have looked over Doctor New's paper and I think it possible we may have here a suggestion that will be more or less revolutionary in our conception of cleft palate surgery. We have in the past been attempting whole palate operations on any kind of a palate that came along and it seems to me that we must differentiate palates, particularly as regards selection of procedure. This is one of the reasons we have been fussing so much over this classification in order to separate these palates. There is one palate, which I am pleased to call the bilateral alveolar cleft palate, which I have never been able to entirely close at the first sitting. So we have this great debate as to whether we shall continue on with whole palate operations or make selective operation for partial palate procedures. The flaps that I have turned have been the Lane flaps, and I have made an observation that the denuded area on the hard palate will reconstruct itself and in about six weeks or so it will be impossible to tell from where the flap has been taken. In cases where the flap has failed I have turned a second flap

from exactly the same area with primary result, that is, using newly formed tissue. This is a delayed flap but not in the sense of Doctor New's suggestion.

I think we must differentiate between the soft and hard palate in our procedures. Monnier suggested that we raise the whole palate and suture it at a later date, but he did not differentiate between hard and soft palates and consequently the subsequent results were very discouraging. I feel sure that flaps applied to the soft palate are unnecessary and unsurgical and that these procedures must be limited to the hard palate.

Cutting off the blood supply of the hard palate is the thing that gives us loss of tissue and in our operations we take the risk of destroying both the anterior and posterior arteries. It would be an ideal thing to reconstruct our soft palate, raise up the posterior part of the hard palate as a first operation. After several months the posterior blood supply will surely recover. Then as a second procedure we will be justified in cutting free the flap from its anterior blood supply. This would allow wide mobilization and solve the greatest question of this subject, the postoperative hole of the hard palate. All this requires study but the suggestions fit in with experiences elsewhere. Doctor New suggests this as a secondary procedure for postoperative holes but, if proven, then there are possibilities that it may substitute whole palate operations and thus become a primary step.

DR. CARL W. WALDRON, Minneapolis: Doctor New has given us an important contribution to the ways and means of diminishing the hazard of cleft palate operations and I cannot too strongly endorse what he has said about the necessity of waiting at least three months between operations.

I had the opportunity in England of seeing a great number of cases of traumatic palate perforations from war injuries and we were there brought face to face with all

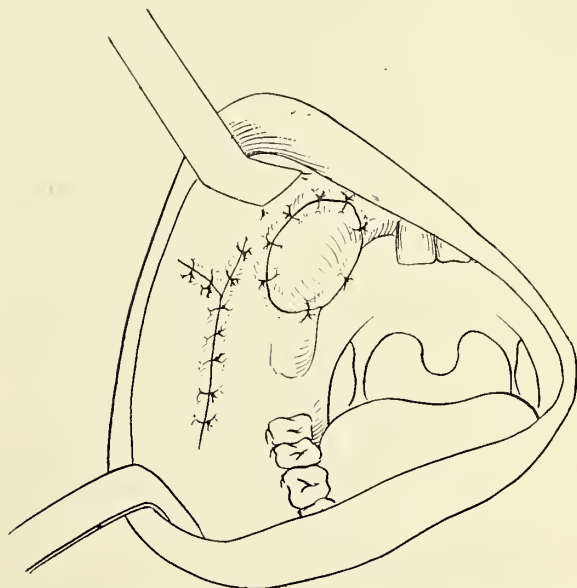


Fig. 7. The pedicle has been replaced to the cheek and the closure of the antrum opening completed.

sorts of diversions of the blood supply and had to devise flaps which in some measure resembled what Doctor New has put before us today in order to close the perforations. We found that the older methods did not give us the results that we wished and we modified them by using the flap operation with the pedicle situated posteriorly where possible. We felt, however, that we could do it in one stage. At the same time we were doing delayed flap operations in our other plastic surgery about the face and chest particularly, using the various types of flaps. We did not feel that putting a delayed flap back on denuded bone would increase the blood supply as much as Doctor New seems to feel takes place. We did not try it out, in fact we felt that if we judged our blood supply, particularly if we took into consideration the original scar, the original wound, we could be sure of an ultimate result providing the flap was wide enough.

In the large antral perforations it is necessary to use the hinge flap, usually from the cheek.

I agree with Doctor New in what he feels about the Lane operation, and that his operation by a posterior wide pedicle permits a much greater blood supply for the flap than where the flap is hinged over an area at the margin of the perforation where previous operations perhaps have resulted in considerable scarring. Undoubtedly the blood supply at the margin is deficient and it is far better to have a long flap attached posteriorly with a blood supply that is assured.

With reference to this delayed flap, I wonder why Doctor New feels that the blood supply is helped by putting it back over denuded bone? I should think it would perhaps be a little better at the first operation to free up the hard palate, leaving the flap attached posteriorly where a pedicle is used, and also partially attached anteriorly, perhaps outlined, or left partially attached laterally in order to increase the blood supply. I have used the delayed flap in all other types of plastic surgery. In rhinoplasties, where we were able to judge the blood supply quite well we did not feel that the delayed flap was necessary. Furthermore it does thicken the flaps and in some types of plastic surgery one undoubtedly wants to keep the flap as thin as possible. However, I do feel that what Doctor New has put before us today will perhaps revolutionize the treatment of cleft palates because this has been a bugbear in the past for those doing the work and if anything can be done to increase the blood supply and otherwise insure successful healing it should be carried out in order to obtain the best possible result.

DR. G. B. NEW (closing): I did not attempt a full discussion of the causes of these postoperative openings in the palate. I am sure you have all read Doctor Ritchie's admirable paper on "Congenital cleft lip and palate," showing how each of these various types should be studied carefully. If the principles that he had outlined previously had been followed, many of these conditions would not have occurred.

In answer to Doctor Waldron's question I will say that, on account of the marked scarring and the inelasticity of the tissues, I believe that it is best to cut the flap across anteriorly, leaving the pedicle posteriorly; this allows the front part of the palate to come together more readily.

THE HEART IN CERTAIN OF THE SEVERE EXHAUSTING INFECTIONS*

CHARLES LYMAN GREENE, M.D.

St. Paul

Two statements may be regarded as axiomatic in the light of present knowledge: (1) that the heart is affected more or less profoundly in all acute *exhausting* infections; (2) that the heart disease of middle age represents in the main either the residual effects of acute infection, single or multiple, or the summation of intermittent or remittent bacterial toxemias, arising from the activity of chronic hidden septic foci—chief of which are the tonsils, gall-bladder, sinuses and teeth.

Three chief groups are represented in chronic heart disease of the usual types:

1. That of endocarditis, with which one at its inception would never expect to find a normal myocardium and in which the condition of the heart muscle and not the valvular lesion per se is the factor of chief importance in the lifetime of the individual.

2. The diseases characterized by slowly progressive degeneration, or, far less frequently, a chronic low grade inflammation. True "chronic myocarditis" really is so rare that the term might almost be dispensed with entirely.

3. The third group comprises unstable, intermittently toxic, and more or less continuously or intermittently overstrained hearts, in visceroptotic individuals, in which the element of progressive degenerative change or low grade inflammation is not necessarily a factor. Such are the hearts which compose the greater part of the group which excited so much attention during the Great War, although Dr. Hartsborn of Philadelphia had well named the condition in the later sixties of the past century as "heart exhaustion" and Da-Costa, far less accurately, as "soldier's heart"—inasmuch as they are excessively frequent in the civilian population in all countries. This type of heart proved, as I had occasion to predict before we entered the field, one of the worst obstacles to efficient military selection and service during the Great War. The heart of this type exists in a host of individuals and may and does undergo in many

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of these such development as enables its possessor to carry the ordinary burdens of life without serious inconvenience or discomfort; in others it remains always unstable, vulnerable, and lacking in reserve.

I shall not bore you to-night by any extended dissertation upon the insufficient "drop heart," which has been the subject of so many of my papers, since its clinical significance and importance was demonstrated by me in 1912. Let it suffice to say that its possessors appear to be peculiarly susceptible to acute prostrating and chronic intermittent infections as well as to depressed states of nutrition affecting myocardial tonus and that, by reason of its narrow diameter, it may and very frequently does, achieve a wide dilatation which escapes detection, as such, by the attending physician.

Such hearts when of the definitely asthenic type, with unstable tonus and reserve, are peculiarly and particularly dangerous to their possessors in the presence of acute prostrating infections of the kind producing toxins with an affinity for the myocardium—diphtheria, scarlet fever, variola, "trench fever," influenza and rheumatism, being notable examples. They also are unusually vulnerable to the toxins emanating from concealed septic foci.

All behave in general as do sthenic hearts with respect to the incidence of endocarditis, pericarditis and actual myocarditis, but their possibilities in the way of acquirement of minor insufficiencies and dilatations in toxemic states are far greater than obtain in the case of the sthenic heart.

All hearts are marvelously enduring and long-suffering. Were it not for this fact, heart disease as a cause of death would not only head the list, as it does to-day, but rise to appalling heights in the graphic chart, for at the present time a diseased heart must to a large extent operate automatically and unaided to maintain an adequate reserve and postpone an untimely break in compensation.

We have learned much during the past decade or two with respect to disturbance of heart function and little by little such knowledge is being passed on to the general profession, but we still have far to go before we can stand unashamed before the world or feel that we have even measurably discharged our duty to the actual or potential cardiopath.

I shall devote myself chiefly at this time to a

consideration of the effects of certain common severe and exhausting infections upon the cardiovascular system and suggest a means of partial correction of certain dangerous tendencies in relation to the care of patients both during periods of infection and in and after convalescence.

Let us consider the heart in acute infections, not exclusively as seen upon the autopsy table or under the microscope in the laboratory, but as a delicate, highly complex, exquisitely regulated and adjusted living engine, one entitled to at least as much care, prophylactic, diagnostic and reparative, as is that of the automobile.

We do not wait for our motor car to break down before attempting its repair; we do try to recognize engine trouble before the motor stalls, and I would plead only for an equal amount of solicitude for an engine whose maintained efficiency means to its possessor either health, comfort and "length of days" or illness, discomfort and untimely death.

Even the gross pathologist admits now that "functional" disturbance may attain a high, dangerous, or even fatal degree without the concurrence of macroscopic or even microscopic changes in the cardio-vascular system at all adequate to account for the disturbance or termination of function. It is comforting to one who ventured this assertion many years ago to read now its iteration and reiteration by recognized authorities.

It is our duty as physicians to prevent as well as to alleviate and cure disease. With respect to the heart we find in the infections the actual source of nearly all serious diseases of the heart and we have no right to make the recognition of established, gross and palpable symptoms of heart weakness the standard of diagnostic efficiency in such cases or fail to protect our patients from both the immediate and remote effects of bacterial toxins by proper precautions during and after the period of infection and toxemia. At present, with rare exceptions, we must plead guilty to both counts of the indictment.

In the care and protection of a heart already functionally impaired or crippled we must seek primarily the maximal rehabilitation or restoration of myocardial reserve.

In the presence of an acute infection of the exhausting type we know that reserve at least is threatened if not the structural integrity of the neuro-muscular cardiovascular mechanism, and it

becomes our duty to detect the earlier and minor evidences of functional impairment.

We cannot see a myocarditis; we cannot affirm positively its absence or its presence, but we can and ought to detect symptoms of cardiac weakness before they reach a high grade.

Whatever may be the actual lesion present in any given heart—whether endocarditis, myocarditis, degeneration, congenital inadequacy of structure and function of toxemia alone—lacking gross or extensive structural changes, it is the determination of the integrity or impairment of heart-muscle function which is the paramount issue.

The methods usually depended upon at this time, almost universally, for the detection even of actual decided or gross dilatation of the heart are misleading, fallacious, and inadequate to fulfill the demands of effective and scientific medical treatment.

Skilful and timely diagnosis is not merely the handmaiden, but the indispensable prerequisite of effective therapy.

Chronic structural disease of the heart, as stated, depends almost wholly upon previous and past or repeated recurrent or intermittent infections. These vary greatly in their effect and in the frequency and selective sites of attack upon the cardiovascular apparatus, as also in the transient or enduring quality of the damage primarily inflicted.

The development of chronic disease of the heart muscle itself is, in the great majority of instances, extremely slow, whether it be primary or secondary, associated with the juvenile endocarditic lesions, nonendocarditic but subject to the accelerations imparted by recurrent low grade toxemia, persistent or recurrent overstrain, or the added burden of arterial hypertension and arteriosclerosis.

We cannot hope to follow it throughout its course in many instances or detect it as early as we would like to do, but we can and should detect it far earlier than we do at the present time—even lacking such invaluable aids as some of us are fortunate enough to possess in the polygraph and electrocardiograph.

To achieve this we must understand and evaluate properly such expressions of limitation of heart reserve as manifest themselves in subjective symptoms associated or not with non-endocarditic valvular leakages expressed in systolic bruits or first sound impurities such as are termed too often

“accidental” and, too generally, held to be negligible. We must watch for and detect variations in the heart sounds, in the area and diffusion and character of the apex beat and by modern improved percussion, reinforced by roentgenography when possible, determine the presence or absence of enlargement of the heart.

It is well to remember in this connection that hypertrophy causes no massive heart enlargement, and aortic stenosis, the lesion best showing an almost pure hypertrophy, may require years for the development of any marked increase in outline.

It is dilatation, with or without hypertrophy, that extends the heart borders to any very marked degree and this in endocarditic valvular lesions is obligatory and relatively negligible, if combined with hypertrophy and unassociated with subjective or objective symptoms of impaired myocardial reserve.

An adult dilated ptotic (“drop”) heart in diphtheria measuring only 11 cm., or less, in total transverse diameter may be far more serious to its possessor than a 20 cm. heart associated with compensated, subjectively symptomless, endocarditic aortic and mitral disease or even a myocardial degeneration, lacking endocarditis.

A murmur so loud as to be autoaudible and heard “at distance” may be far less ominous than a soft systolic murmur developing at the apex during diphtheria or acute rheumatic arthritis.

A point of maximum impulse that is shifting outward hour by hour may be, and often is, the precursor of death in diphtheria and a mere diffusion of the apex beat in any acute infection is a warning and a precautionary signal. One must not wait for striking symptoms of decompensation in such cases.

Changes in the first sound at the apex—making it unduly sharp, soft, distant or murmurish—are things to be weighed and noted.

Increasing pallor, with or without cyanosis, an unwillingness to move, or be moved, epigastric pain and tenderness, resistance to pressure, or tenderness, over an hepatic border in the severe acute infections have a significance similar to, but often greater than, the appearance of arrhythmia or excessive tachycardia.

Above all things the practitioner should remember that the nipple is no guide in the determination of a normal heart outline and even the midsternal line is a deceptive landmark.

Normal hearts are small or large according to the structural type of their owners and vary in practice from 7.5 cm. to 14 cm. in total transverse diameter.

The old flat-finger percussion, the classic landmarks, and the current dicta as to normal heart dimensions are hopelessly out of date.

In our forced reliance upon subjective symptoms, subjective weakness, precordial oppression, atypical apex murmurs, subjective or exertion-dyspnea, heart-sound variants and abnormal accentuations we shall err occasionally. In adherence to old methods and traditions we must and do blunder often and inexcusably.

Remember also that manually demonstrable arrhythmia is not the rule even in the decompensated, degenerative lesions of middle age and relatively rare in toxic or congenital inadequacy. I have heard it said that all cases of so-called chronic "myocarditis" showed an irregular pulse; as a matter of fact, only the small minority do show it.

The electrocardiograph and polygraph reveal many disturbances of rhythm undeterminable by palpation and this is particularly true of lengthened conduction-time (partial heart block) so commonly encountered in acute infectious disease as well as in the chronic heart disease of middle age.

It is myocardial tonus which is most important to the individual owner and next to that perhaps comes a conduction-time at least relatively normal.

Suddenly developed arrhythmias such as paroxysmal tachycardia, fibrillation and flutter are attended in acute infections by coincident heart dilatation or an increase of a preexisting one. Normal rhythm obviously is important to a toxemic heart.

Tonus is impaired easily and by many conditions, especially in the asthenic drop heart.

From clinical observation it would seem that it can be diminished to an extent sufficient to produce marked decompensation without a coincident dilatation of decided and demonstrable degree. Ordinarily, however, in the absence of a high grade of hypertrophy the marked decompensation of myocardial atony is associated with a demonstrable dilatation.

Minor insufficiency may or may not be coincident with determinable enlargement, but even mental shock is capable of producing sudden acute, massive dilatation and syncope.

The first effect of myocardial toxemia in acute or chronic infections is a reduction in tonus.

If we consider certain of the acute infections we find wide variations in the degree of myocardial toxemia ordinarily encountered. True chronic myocarditis apparently obtains very rarely after typhus fever, pneumonia, measles, scarlet fever, or even variola—yet in these diseases the heart-tonus may be profoundly affected and relative incompetence may persist for a considerable period after the active toxemic stage is passed and be shown by persistent weakness or lethargy, exertion-dyspnea, impure, weak, or distant heart tones and bradycardia or tachycardia.

Acute myocarditis is rare in the commoner infections except acute rheumatic arthritis, severe variola, and diphtheria; yet damaging toxemic results are common during and following many other infections.

Incidentally it is to be hoped that the old idea that sudden death in severe infections is due to primary sudden vaso motor paralysis, will be relegated to the list of exploded theories.

It should be remembered also that the apparent severity of a given infection is not a measure of the degree of heart involvement, either present or possible, and that the problem is not limited to any degree of actual structural myocardial damage present in the given case but is extended to include residual damage such as can be determined only by careful watching in convalescence and occasional observation long thereafter. Even a mitral stenosis may not be clinically demonstrable for months after recovery from the causative acute infection.

In *scarlet fever*, severe decompensation, dilatation and temporary mitral leakage are very common, but seldom permanent or fatal. The lesser insufficiencies are almost invariably present in cases of any severity. Residual damage to the endocardium is relatively rare, if cases are managed properly in convalescence as well as during the acute stages.

It is especially necessary to note and beware of the prolongation of the rapid pulse into convalescence, a failure of heart sounds to attain normality in tone and accent, prolonged physical weakness and inertia, or decided persisting or increasing diffusion or displacement of the apex-beat.

In severe *smallpox* the heart is affected decid-

edly, always myocardially, and marked mitral murmurs of relative insufficiency are common.

True endocarditis, pericarditic and pancarditic complications are rare but serious when present. Care in convalescence is essential to full recovery from the myocardial effects and patients must be protected from involuntary overstrain.

In *typhoid fever* sudden death from the heart is rare, yet myocardial weakness, slow in development, is profound and myocardial changes are decided.

The apathy and profound prostration present are in a measure protective to the crippled heart. The relative bradycardia is not affected by atropine and its appearance though due to myocardial toxemia is a more favorable omen than its absence in proven typhoid fever.

The heart dilatation so generally present in "typhoid" is maximally left ventricular in most instances. Relative mitral insufficiency is a common finding after the disease is fully established and soft distant tones the rule.

The tendency to progressive heart weakness is to be remembered and the patient carefully safeguarded both during the attack and throughout convalescence. An acute myocarditis with frank evidence of critical heart weakness may develop at any time during the active stage though it seldom appears early save in ambulant cases.

Paratyphoid fever affects the heart similarly but less severely.

Watch with special care the heart that fails to show relative bradycardia in typhoid fever, is arrhythmic, or carries a rapid rate into convalescence.

With respect to *influenza* I can only say that despite a few opinions to the contrary I regard it as an infection extremely damaging to the heart and one of the most frequent causes of permanent myocardial damage, especially in middle and old age. Frank myocarditis with extreme decompensation symptoms is rare, even in pneumonic cases, but myocardial toxemia is profound in severe cases and oftentimes also in those of an apparently minor type.

Returning from army service in 1919 to a practice devoted almost wholly to diseases of the heart, blood vessels and kidneys, I found at least two-thirds of the new cases presenting during that year and that of 1920, dated their symptoms from in-

fluenza attacks, many of which were described as of only a few days duration.

Making due allowance for the factor of skeletal muscle degeneration which may be noted at autopsy in some cases, the sudden profound weakness of this disease is characteristically that of myocardial toxemia of a type peculiar in its rapid effect upon heart tonus.

Bradycardia is suggestively frequent during convalescence; tachycardia common and often unduly persistent over long periods.

I know of no disease, acute rheumatic arthritis not excepted, in which so much persisting myocardial damage results from lack of proper management in convalescence. Its effect in relighting the old myocardial tonus deficiencies of middle age and accelerating myocardial degenerations is very striking.

Endocarditic lesions are rare; actual myocarditis uncommon.

The tremendous number of people attacked in pan-epidemics is, of course, to be considered, but so also is the tremendous mortality of its pneumonic form. Of especial myocardial significance was the frequency of relapses into the fatal pneumonic form when patients attempted to remain active or resumed activity too soon in apparently simple and trivial cases. No disease requires more careful handling in convalescence or repays it better. Persisting bradycardia, tachycardia, weakness, arrhythmia, syncopal tendency, angina, diffuse apex-beat, abnormal heart sounds are danger signals not to be disregarded.

The danger in convalescence is not from death or the development of an acute structural change myo-, peri-, or endocarditis although these may occur, but rather of the establishment of a prolonged period of myocardial atony, the initiation of a myocardial degeneration, or the relighting and acceleration of a pre-existing disability.

Diphtheria is a strange example of an infection which hits the myocardium hard, yet seldom leaves lasting damage when it fails to kill.

In all cases of any severity the heart function is affected and in many the symptoms are frank, outspoken and deadly. The more severe decompensation and dilatation may come early, but usually appears late, commonly during convalescence, and recovery or death occurs within a week after the onset of outspoken symptoms and frank physical signs.

The heart must be watched at all times and especially as the infection is subsiding. In this as in every other severe infection the heart should be checked up every thirty to sixty days after recovery apparently is complete until six months at least have passed.

The naso-pharyngeal cases are most prone to serious or fatal heart complications and laryngeal cases least. Sudden death from the heart may occur as late as thirty or even sixty days after the onset of diphtheria. In the case of a badly damaged heart seen during the past few days, severe life-threatening decompensation appeared six weeks after the onset. In this as in certain other infections the apparent subsidence of the toxemia does not remove the danger of cardio-vascular collapse.

The symptoms of extreme established myocardial weakness are strikingly objective, but are preceded usually by minor signs not to be disregarded and of the utmost importance in the saving of life.

Tachycardia, excessive, persisting, or renewed after a drop in pulse rate, is a danger signal, as is also increasing pallor or greyness—even lacking cyanosis. Voluntary immobility and aimless restlessness alike are ominous symptoms.

Extreme weakness and profound debility in convalescence, precordial or epigastric oppression, tenderness along the liver margin or over the heart may precede actual descent of the hepatic border and the exhausting vomiting so commonly observed in extreme decompensation and dilatation.

The apex-beat may be diffuse; the finger-point area of maximum impulse may be found to shift outward; abnormal pulsation of cardiac rhythm may appear over and near the precordium. Changes in the first sound with or without bruits must be noted; gallop rhythm, actual heart block, flutter or fibrillation may be present or the type of arrhythmia may change from time to time. The lability of the pulse may be suggestively increased.

The heart border should be percussed carefully at each visit. As stated, diphtheritic heart failure runs its course to recovery or death in a few days. The mortality under present methods in cases showing decided heart involvement exceeds 50 per cent. This figure surely can and ought to be lowered. The recovery is rapid and is usually complete, but cases must be brought slowly and carefully into physical activity and watched for

several weeks, as late reinvolvement may and does occur.

In this as in all serious cardiac involvement in the acute infections, all possible limitation of voluntary movement must be secured. The patient must be disturbed as little as possible, be turned and moved passively and the head must be kept low so long as any symptoms of marked cardiac weakness persist.

I cannot attempt to discuss the heart in acute rheumatic arthritis, the generator of that toxin most inimical and damaging to the myo-, peri-, and endocardium, the most enduring in its effects and, unlike the immunity-conferring diseases, prone to recur and be more dangerous with each succeeding visitation.

The myocardium is always affected markedly in acute rheumatism, though endocarditis may be the declamatory and vociferous lesion or a precarditis may exist alone or be superadded to form a pancarditis.

The toxic disturbances of the heart may be transient or long persisting and even after apparent recovery a degenerative change initiated by the attacks may progress intermittently or persistingly, though very slowly, and this may be fed and accelerated by streptococcus strains bred in the depths of infected tonsils—ideal incubators of pathogenic micro-organisms.

Over a decade ago I called attention to tonsillitis as an almost invariable precursor of acute and subacute rheumatic attacks. The process seems to be a slow sepsis, from one to three weeks elapsing between the sore throat, often trivial, and the onset of joint symptoms. The long delay seemingly had prevented any general recognition of the clinical sequence.

In children I have seen death from heart failure following tonsillitis with frank rheumatic symptoms almost wholly absent. In them the joint symptoms often are trivial or apparently wholly lacking, yet most serious cardiac complications may arise.

Endocarditic lesions are usually frank and outspoken; pericarditis may or may not be; myocardial damage is masked and hidden and even marked dilatation, under present methods, is often undetected.

I need not emphasize the importance of careful watching during convalescence and occasional later observation thereafter for a period of at least one

year, in the interest of the patient and of the credit of the physician.

Mitral stenosis and aortic stenosis for example are slow in development and many months will be required before the heart of a rheumatic case, apparently unscathed by the attack, can be declared normal.

I cannot attempt to deal with the heart of pneumonia and indeed the subject merits a special paper. The subject of cardiac syphilis also is too large for present discussion. No disease is more important in relation to chronic cardio-vascular disease. We know now that not alone is the aorta attacked early but that the disease is peculiarly selective for the blood vessels from the largest trunk to the tiniest arterioles and that the coronary system itself is frequently involved. Moreover Warthin found every case coming to autopsy showed evidence of interstitial myocarditis. Indeed marked myocardial weakness may and not infrequently does accompany the secondary stage of this protean infection.

I shall not longer tax your patience, great as is the temptation, for the field is unlimited. In closing I would emphasize the following points, viz:

1. Demonstrable disturbances of heart strength and myocardial insufficiency occur in practically all severe prostrating infections.

2. The importance of the recognition of such toxemic effects is manifest in view of the frequent crippling effects produced, residual damage created and actual deaths encountered.

3. This recognition to represent full value to the patient must be based upon the detection of minor no less than major signs of impaired myocardial tonus and reserve.

4. It must include also the ability to detect progressive dilatation in its lesser and earlier stages.

5. This demands a knowledge of the wide variation in the size of the normal heart and a recognition of the fact that commonly accepted landmarks and flat finger percussion are of little value.

6. The importance of determining and recording the position and character of the heart borders, the point of maximum impulse, and the character of the apex-beat at each visit, should be better understood, as well as the clinical value of variations in the quality and rhythm of heart tones and the subjective symptoms of the patient.

7. The patient is entitled to and should receive most careful observation not alone during the onset, height, and subsidence of an exhausting infection but also throughout a deliberate and systematically ordered convalescence.

8. In the case of the severer acute infections and in all cases of acute rheumatic arthritis, occasional examinations of the heart should be made during a period of several months following apparent recovery.

9. Investigations conducted in our military hospitals following the Great War, showed that the time allotted to convalescence from acute infections should have been doubled. It would be a means of saving many lives if a like added term could be introduced into civilian practice.

I stop here with an apology for what may seem an over-critical paper. If it so impresses you. I must plead my intense interest and profound convictions as my justification and direct your attention to the fact that whatever of criticism it does contain, is constructive and not destructive.

THE DIAGNOSIS AND TREATMENT OF URETERAL CALCULI*

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Clinical observation and animal experimentation demonstrate that infection plays a major rôle in the production of renal stones. A careful study of the histories and clinical findings of fifty patients with ureteral stones reveals infection present in 75 per cent. In 70 per cent infection was found in the teeth, tonsils, sinuses, etc. I was unable to ascertain the presence or absence of infection in 17 per cent of the patients studied because in these instances I was acting as a consultant so that complete clinical evidence was not available.

Localization.—Seventy to seventy-five per cent of renal stones pass from the kidney. About 40 per cent are found in the right ureter and 30 per cent in the left ureter. Ten per cent are bilateral. Stones are found in males three times as often as in females. Eighty per cent of stones found in the ureter are within the lower third, a few lodge in the middle third, and about 15 per cent are found at the uretero-pelvic juncture.

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DIAGNOSIS

Methods of diagnosis have increased and improved very much during recent years. If ureteral stone is suspected, data obtained from urinalysis, roentgen ray, cystoscopy, ureteral catheterization and pyelo-ureterography is necessary before a diagnosis can be made.

Many needless pelvic and abdominal operations are performed from which the patients receive no relief because a ureteral stone is not considered in the differential diagnosis of pelvic and abdominal lesions. I find that one patient in four with right ureteral stone has had some previous unnecessary operation.

Symptoms.—Pain is the most prominent symptom and appears in about 98 per cent of all patients. Dr. John B. Murphy taught that ureteral calculus must be thought of when considering the cause of any abdominal pain. The radiation of the pain may be variable. In the majority of instances pain is referred to the renal area but may be referred to the upper abdomen, to the mid-abdomen, or to the appendix area. In many instances, it is referred to the lower ureter, to the bladder, and to the testicle. The position of the calculus has some effect on the pain radiation. Stones found in the upper ureter may have pain radiation to the testicle, to the bladder, and sometimes to the appendix area. A stone in the lower ureter usually causes pain in the upper abdomen or renal area.

The size and contour of ureteral calculi have some bearing on the character of the pain. A stone with a ragged outline will produce very severe knife-like pain, whether large or small, while a round and smooth stone of any size may pass through the ureter with only slight pain or aching.

The onset of pain with ureteral calculus may be sudden or insidious. The first attack is usually severe but may be only a noticeable ache in the back or side.

The passage of a ureteral stone may be silent. Pain may come in paroxysms or may be continuous. The mechanism which propels the stone through the ureter is a combination of back pressure of urine and contraction of the ureter. When the calculus is arrested at any point in the ureter, pain becomes chronic and is described by the patient as "a constant ache." If urine in sufficient quantity can pass the stone, the pain may partially or entirely subside. Pain may be absent for days or months when a stone remains in a dilated portion of the

ureter where it produces no obstruction, but appears as soon as the calculus re-engages in the undilated ureter and continues its progress. Sudden cessation of pain may indicate that the stone has passed through the ureter into the bladder.

Tenderness is noted in the majority of instances in the renal area and is probably due to the distention of the kidney pelvis and subsequent intrarenal pressure. Murphy percussion is positive but is not a differential point between renal or ureteral calculi and other renal lesions. Tenderness over the appendix area or over the lower ureter may be present. Frequently this has led surgeons to remove a normal appendix when a ureteral stone was present. There may be general abdominal tenderness.

Tumor may be present, particularly if the attack has been a prolonged one or a chronic condition exists. The tumor is usually a hydro- or pyonephrosis. In the acute cases the kidney is very tender but enlargement is not usually found.

Vesicle irritability is noticed at some time during the passage of a ureteral stone in approximately 80 per cent of patients. This sign frequently assists in the differential diagnosis from other abdominal or pelvic conditions. When the stone is in the upper ureter this symptom may not be present. As the stone approaches the bladder, vesicle irritability increases. When a ureteral stone is situated in the bladder section of the ureter, irritability is most marked. If a stone completely obstructs the ureter, vesicle irritability is not frequent unless the obstruction be in the bladder section of the ureter. Patients complain more of frequency of urination than of burning. When a stone is in the bladder section of the ureter or in the ureteral meatus stranguary may be noticed.

Urinalysis.—Catheterized bladder specimens should be obtained whenever possible. Pus or blood cells in the urine should cause the physician to search carefully for a stone or other urinary lesion but the absence of pus or blood cells does not preclude the absence of stone. A stone may entirely obstruct the ureter so that no urine is passed into the bladder from the suspected side. Gross blood or pus or both in the urine are of definite diagnostic value but alone or associated with pain are insufficient evidence upon which a diagnosis of ureteral stone may be made. Gross blood occurs less frequently with ureteral stone than with renal stone. This symptom may be the only one noted by the patient indicating trouble in the urinary tract.

Gross pus indicates a severe secondary infection with probable kidney damage. Daily examinations of the urine are necessary if we expect to find the few blood or pus cells which are usually present at some time and which help so much to clear up a diagnosis concerning which we may be in doubt. A specimen obtained after a recent attack of pain will contain blood or pus cells when specimens obtained at other times may be negative.

Nausea and Vomiting.—In certain patients vomiting is uncontrollable and occurs as long as the ureter is obstructed. Severe vomiting is not frequent although vomiting at some time during the history of the trouble is the rule. When vomiting is continuous, lesions of the gastro-intestinal tract must be thought of as co-existing with stone or as the sole cause of the symptoms under consideration.

Reflex Ileus.—In three instances, the finding of a shadow in the roentgenogram during a routine examination prevented me from exploring the abdomen for intestinal obstruction. The patients had abdominal distention together with vomiting and obstipation for several days.

Palpation.—Bimanual palpation for a low ureteral stone, either through the rectum or vagina, should always be attempted. As other conditions in the male and female pelvis may simulate a small hard object thought to be stone, one should be careful and not depend upon palpation alone as a means of diagnosis. In the female I have been able to palpate one in three ureteral stones that were near the bladder or in the bladder section of the ureter.

Roentgen Ray.—Although the frequent and more widespread use of the roentgen ray has greatly assisted in the diagnosis of ureteral stone, in many instances roentgenograms considered alone—that is, without the aid of the cystoscope and ureteral catheter—have complicated the diagnosis. A roentgen shadow in or near the urinary tract cannot always be interpreted as a ureteral or renal stone. Many times shadows supposed to be stones will not be found at operation, and, conversely, many shadows thought to be far away from the urinary tract are later found to be urinary calculi. The roentgenogram, when properly interpreted by means of the cystoscope and shadow catheter and pyeloureterogram, will demonstrate ureteral stone, if present, in about 94 per cent of instances. I must condemn the practice of operating for shadows found in the roentgenogram even when a good his-

tory is obtained unless the shadows have been checked by the ureteral catheter.

Shadows occurring near the lower ureter are more frequently misinterpreted than those found in the middle or upper ureter. Irregular shadows are more often stones than round ones although this cannot be used as a diagnostic aid. Shadows that may be confused with renal or ureteral shadows are the following: appendiceal stones, calcified thickened tip of appendix, phleboliths, fecoliths, buried sutures covered with lime salts, obliterating emboli, calcified tag of omentum, gall stone, pieces of bone, bullets, or shot, Murphy button, bismuth in the intestine, Pott's disease, abscesses with calcification, ossification of costal cartilages. All of these may cast a shadow similar to that found with stone.

Stereoscopic roentgenograms are of some value when the ureter contains a shadow-casting catheter so that the plane of the ureter may be distinguished from that of the suspected shadow. Shifting the tube so that stereoscopic views of suspected shadows are obtained on the same plate has been used by Kretschmer to differentiate extra-ureteral from ureteral shadows. If the shadow of the catheter and the suspected stone are adjacent in both views, the shadow is said to be a stone. If, however, in the second view—that is, after the tube has been shifted—the shadow of the catheter is far away from that of the suspected shadow, a ureteral stone is not present.

The Buckey diaphragm has assisted in revealing shadows which might not be seen with the ordinary roentgen technique. Shadows that are projected on the spine or on the pelvic bones may be overlooked. In some instances, the tube can be turned at an angle so that suspected shadows in this locality can be projected on the film where they do not overlie the pelvic bones.

If patients do not routinely carry out the instructions given them concerning preparation for a roentgenogram, gas shadows, etc., may cover up a small stone shadow.

Stones of a low calcium content will not cast as distinct a shadow as those having an abundance of calcium.

Cystoscopic findings.—The bladder is usually irritable, the examination being very troublesome to the patient in spite of careful local anesthesia. The meatus of the ureter containing the stone is overactive and small spurts of urine are frequently ex-

uded. The urine may be cloudy or hemorrhagic. The meatus may be red, the lips edematous—this latter depending somewhat upon the amount of infection present. When the stone is in the bladder section of the ureter, the meatus may be prominent and may protrude as a small tumor. Its opening may be hard to find. The urine oozes out without force and there may be no ureteral contraction. Sometimes the calculus can be seen protruding from the meatus.

Catheterization.—The ureteral catheter usually meets obstruction which may be absolute or only a slight difficulty. This depends upon the amount of spasm, the acuteness of symptoms, the anesthetic used, the contour of the stone but not its size. A small ragged stone can produce complete obstruction while a large round one may be passed easily. A patient in severe pain during an acute attack will not relax, so that obstruction is usually complete. The same patient after a large dose of morphine or a general anesthetic may relax and the obstruction may be slight or absent. When a patient is completely relaxed during anesthesia and ureteral catheterization is attempted, stones are frequently pushed from the lower ureter into the pelvis of the kidney. This occurs most often when a patient has had a stone lodged in the ureter for some time so that the ureter above the stone is thoroughly dilated.

When passing a stone obstruction with a ureteral catheter, one may feel grating or holding. When the eye of the catheter passes above the obstruction, a sudden constant flow of urine which may contain pus or blood usually is found. This is a positive finding indicating intra-ureteral obstruction. In some instances, mucus which has collected above the stone may temporarily obstruct the eye and lumen of the catheter so that no urine can be obtained until the mucus is removed. If in doubt concerning the cause of ureteral obstruction, a wax catheter may be used. If a calculus is present and the wax catheter can be passed up to or beyond the stone, a scratch mark will be made on the wax. This is of great diagnostic importance. When a catheter has been passed beyond a suspected obstruction and there has been some difficulty in the passage, the catheter should not be removed until the diagnosis has been completed. If the catheter is removed, the irritation from this manipulation may cause swelling or a change in the axis of the stone so that obstruction may then become complete, which prevents the introduction of a second catheter. If no

urine is obtained, the ureteral catheter should be thoroughly irrigated to be sure of its patency.

Pyelography.—A uretero-pyelogram will demonstrate dilatation if present above the stone obstruction. When a uretero-pyelogram is made, the eye of the catheter should just pass the suspected obstruction so that when the shadow-casting medium is injected, the ureter will be filled first and the pelvis second; that is, will be filled from the bottom up. When ureteral stone is present, a shadow catheter passes over or adjacent to the suspected shadow in all roentgenograms no matter at what angle they may be taken. If the stone has been a long time in its passage through the ureter and complete ureteral obstruction has been present, the pelvis of the kidney may be dilated.

Differential Functional Tests.—The differential functional estimate of kidneys as obtained by means of the dye tests may be misleading. The separate functional estimate does not always indicate the functional capacity of the kidney that is suspected of damage because of a ureteral stone.

Recently I examined two patients with ureteral stone that illustrate this observation. A man had complained of ureteral colic for six days, the last two or three days constantly. Obstruction was found just outside the bladder section of the left ureter. The obstruction was passed with some difficulty. The catheter was allowed to remain in place and a differential function test was done. The right side appeared in normal time. The left side produced no dye after twenty minutes observation. A pyelo-ureterogram was made which demonstrated a normal kidney pelvis but slight dilatation of the ureter. The ureteral catheter was irrigated every two hours to prevent plugging. There was a quantity of highly colored urine which drained through the catheter. Twenty-four hours after the first test was made, the dye returned in normal time and the concentration was good in five minutes.

Another patient passed ureteral calculi from his left kidney eighteen years ago. He had pain in the left loin for the last two months in short attacks. December 26, 1921, the pain was very severe and lasted until December 29th. After three attempts, the stone obstruction was passed with a small ureteral catheter. A differential functional test was made and no dye was obtained after thirty minutes from the affected side. The next day the dye returned slightly in eight minutes and became concentrated after ten minutes. Two days later

the dye returned in normal time and the concentration was normal.

The differential diagnosis of ureteral stone is not easy. The following are a few of the conditions from which ureteral stone must be differentiated: appendicitis, gall bladder disease, stones or infection, diseases of the ovary, pelvic infection, duodenal ulcer and perforation, gastric ulcer and perforation, intestinal obstruction, pneumonia with abdominal pain, other ureteral or kidney lesions, pelvic tumors, any abdominal lesion with a shadow in the roentgenogram.

TREATMENT

I find definite indications for treatment in each individual case depending upon the location, size and number of stones, together with the general condition of the patient, the combined kidney function and extra-urinary complications. The treatment of ureteral stone may be divided into non-operative, operative and after-treatment.

Non-operative treatment consists of: (1) manipulation and dilatation of the ureter with ureteral catheters or bougies so that a stone may be assisted in its quick passage through the ureter, and (2) of bimanual manipulation so that a stone may be forced by palpation into the bladder.

About 90 per cent of calculi found at any location in the ureter will pass spontaneously or can be removed by cystoscopic manipulation. Twenty per cent of patients with ureteral stones give histories of previous attacks when stones passed spontaneously. I have watched ureteral stones for months which passed eventually without operation.

Non-operative treatment should begin as soon as a diagnosis is made. A ureteral catheter that has passed a stone obstruction should be allowed to remain in the ureter for several days. This permanent catheter will relieve pain at once because it drains the ureter and kidney pelvis, thus preventing backing up of urine with consequent infection. A permanent catheter will dilate the ureter and will serve as a guide to the passage of additional catheters. These are used as wedges to produce dilatation so that the calibre of the ureter will permit the easy passage of the stone. After as much dilatation as possible is obtained, a few cubic centimeters of sterile oil or glycerine may be injected at the site of obstruction. The ureter above and the pelvis of the kidney are then filled with salt solution or sterile water. This produces pressure which is supposed to hasten the progress of

the stone after the catheter is removed. Silver nitrate, 0.5 per cent, may be injected into the ureter and kidney pelvis to control infection.

When a catheter cannot pass a stone obstruction a small amount of cocain or novocain solution injected into the ureter at the position of the stone may cause the ureter to relax so that a catheter may be passed.

Frequent roentgenograms should be taken to determine the progress of the stone. If progress is not made, frequent catheterizations may be done together with dilatation as just described. When a calculus is caught at the ureterocystic juncture or is in the bladder section of the ureter, instruments that have a catching shoulder may be used. With these a stone may be pulled through the ureter and into the bladder. I use for this purpose steel olives ranging in size from 8 to 20 French. The tips are screwed on to a flexible bougie which is about the size of a No. 6 ureteral catheter.

It is necessary to take roentgenograms after every manipulation with the ureteral catheter since frequently a stone passes without pain after dilatation of the ureter. Do not fail to take roentgenograms and be sure to pass a ureteral catheter after a stone has passed, as you may have but part of the stone and multiple stones may be present.

Fulguration of the uretero-vesicle valve may assist a stone in its passage through the lower ureter.

Operative treatment is indicated (1) when the ureteral stone is large (usually more than 2 cm.) and when it does not progress through the ureter; (2) when the kidney is being destroyed; (3) when reflex anuria occurs; (4) when other diseases contraindicate long attacks of pain; and (5) when the patient cannot withstand without severe reaction the cystoscopic manipulation. In some instances, the economic situation of the patient may demand immediate operation. The size of the stone does not in itself constitute an indication for operation. One should never be in a hurry to operate unless a complication arises.

For stones in the uretero-pelvic juncture and upper third of the ureter, the usual Mayo lumbar incision is used. The lower end of such an incision may be extended as far forward as necessary. This incision will expose the middle third of the ureter as well as the upper third. An extra-peritoneal operation should always be done. For stones caught in the lower third, I like an incision parallel

with Poupart's ligament. Many times one can remove stones from the lower ureter through the usual suprapubic cystotomy incision. One should be able to explore the bladder when necessary without making an additional incision.

Most operations on the lower ureter are done with general or spinal anesthesia with the patient in the Trendelenburg position and turned to the opposite side. Stones may fall back through the ureter and into the kidney pelvis. Sometimes the manipulation of searching for the ureter is sufficient to push a ureteral stone into the bladder.

Suture of the ureter following a ureterotomy is not always necessary; a few interrupted stitches of fine plain gut are sufficient. As a rule the ureter will not leak. If leakage occurs, the ureter may drain for ten to twelve days; fourteen days usually finds the wound clean and dry.

Upper ureteral stones may be pushed into the pelvis of the kidney and a pelvio-lithotomy done. Lower ureteral stones may be squeezed into the bladder or into the bladder section of the ureter, from where they may be removed by splitting the ureteral meatus. After such an operation, the bladder may be closed without suprapubic drainage.

When a ureter has been opened and a stone removed, a large ureteral catheter should be ready for use so that the ureter may be explored from the bladder to the kidney pelvis. Many times fragments of stones may be left after operation or two or more stones may be present when only one shadow was found in the roentgenogram.

After-treatment.—Infection is one of the leading etiological factors in the production of renal stone. Every patient with urinary lithiasis should have all suspicious foci of infection removed and after operation should submit to regular pelvic lavage until the catheterized urines are free from pus and cultures are negative. During convalescence all patients should be re-examined with the roentgen ray for evidence of recurrence and for bits of stones that may have been overlooked. Pelvic lavage should be repeated if stones recur. If a patient comes from a locality that is notorious for its number of urinary stones, all drinking water should be boiled.

CONCLUSIONS

1. Infection is one of the factors in the production of renal and ureteral stone.

2. The diagnosis may not be easy and depends upon the following positive findings: pain, vesicle irritability, urinalysis, roentgen ray, pyeloureterogram, obstruction to the ureteral catheter, and bimanual palpation.

3. Ureteral stone must be thought of when considering any abdominal pain.

4. Eighty per cent of ureteral stones are found in the lower third of the ureter.

5. Differential functional tests do not indicate the true function capacity of a kidney which has been temporarily damaged because of ureteral stone.

6. A patient may pass a ureteral stone that is too small to cast a shadow.

7. A ureteral stone may be silent in its passage through the ureter.

8. A calculus may remain in the ureter for months without producing pain or permanent damage to the kidney.

9. Ureteral stone must be differentiated from the following which are the common conditions found: appendicitis, gall bladder disease (stones or infection), diseases of the ovary, pelvic infection, duodenal ulcer and perforation, gastric ulcer and perforation, intestinal obstruction, pneumonia with abdominal pain, other ureteral or kidney lesions, pelvic tumors, any abdominal lesion with a shadow in the roentgenogram.

10. Ninety to 95 per cent of ureteral stones pass spontaneously or can be removed by manipulation.

11. A permanent ureteral catheter produces dilatation, relieves pain and facilitates the easy and quick passage of a ureteral stone.

12. Not more than 10 per cent of ureteral stones require operation.

13. Do not operate for shadows. Be sure the patient has a stone before you operate.

14. The position of the calculus indicates the type of surgical operation to be done.

15. Indications for operation are distinct. The element of time is not important.

16. After-treatment which includes removal of all foci of infection, lavage of the kidneys, pelvis, etc., is important and should be carefully and thoroughly carried out.

DR. WILLIAM F. BRAASCH, Rochester: Failure to recognize the presence of stones in the bladder by the usual clinical methods occurs surprisingly often. Such errors in diagnosis are due to the facts that in many cases there are

few if any symptoms which may be regarded as typical of stone, that analysis of the urine is often negative, and that the roentgen-ray examination is negative in approximately 20 per cent of cases. It is evident, therefore, that no matter how obscure the symptoms may be, and even though the urinalysis is negative, a roentgenogram should be made; and when the history is suggestive of stone it should not be taken for granted that stone is not present because the roentgen ray is negative. In a great many cases, the diagnosis will depend on the cystoscopic examination.

The subject of stone in the ureter has been ably covered by Dr. Thomas. I should like to call attention, however, to the cases in which the diagnosis is not made because the roentgen ray is negative. The presence of ureteral stone may be overlooked in the roentgenogram because it is obscured by the shadow of the bony pelvis, because it is confused with shadows of extraureteral bodies such as phleboliths, or because its structure is such that it fails to cast a shadow. The diagnosis in such cases can be made only with the aid of the ureteral catheter or the ureterogram.

I have repeatedly observed cases of small stones in the ureter in which there was a definite history of renal colic, and the roentgen-ray and cystoscopic examinations were negative. A diagnosis of stone could, of course, not be made. Nevertheless, the patients were informed that if stones were present they would probably pass. Many of these patients have passed stones in from ten to fifteen days after going home. In such cases we get credit for making the correct diagnosis and for curing the patient.

With regard to the removal of ureteral stone by manipulation: the tendency in the last two years unquestionably is to remove the stones by manipulation whenever possible. This method is not, however, without danger. I have seen very severe infections of the kidney, necessitating the removal of the kidney, as a result of manipulation of these stones in the lower ureter. Furthermore, I have seen a number of cases in which the stone was impacted so that it required repeated attempts to remove it, and as a result there was considerable damage to the kidney. There are definite contraindications to the removal of stones from the ureter by manipulation, and not the least of these is the intolerance of the patient. Not infrequently patients would rather have an operation than repeated cystoscopic manipulations, even with sacral or general anesthesia. Although it is a method that offers brilliant results in many cases, nevertheless it cannot be employed in all.

DR. F. E. B. FOLEY, St. Paul: Dr. Thomas has presented his subject in a very comprehensive and instructive way. Certainly the condition of ureteral stone is one in which the devices of the trained urologist are most needed.

The point Dr. Thomas makes of not operating for shadows is, I think, very important. Even if you have a typical history and the x-ray shows a shadow in the region of the lower part of the ureter, that in itself is no indication for operation. The shadow must be positively identified as a ureteral stone before any operative procedure is undertaken.

A point that occurs to me in connection with surgical procedures in these cases is the healing of the ureter after the removal of the stone. An uninfected normal ureter, if carefully sutured, heals promptly. An infected ureter in which an impacted stone has lain for a long time is greatly

thickened and indurated, making accurate suture impossible. Exposing the ureter and separating it from the surrounding tissues, interferes with its blood supply. These things, together with the constant seepage of urine into the tract, prevent healing and favor the formation of a ureteral fistula. I have had one such experience recently. In such cases I now push a ureteral catheter well up into the ureter and the distal end into the lower segment and into the bladder, bringing it out through the urethra. This catheter in place for a number of days keeps the wound dry and permits the surrounding tissues to heal in about the ureter independently of any process of repair that is going on in the wall of the ureter itself. I would like to hear from Dr. Thomas concerning this procedure.

Another point which Dr. Thomas did not mention particularly is that of ureteral stone as a possible cause of obscure abdominal pain. We have had four or five cases at the Miller Hospital Clinic recently which had no typical history of stone and which had been through other departments without a diagnosis being made. On careful urologic investigation they proved to have ureteral stones.

DR. J. L. CRENSHAW, Rochester: Dr. Thomas has called attention to the fact that in many cases of stone in the ureter the ureteral catheter will not pass the stone until a solution of cocain has been injected into the ureter. In such cases a number of points should be observed. First, if the urethra or ureter has been traumatized, the absorption of the cocain is much more rapid than if there has been no abrasion, and the danger of toxic effects is correspondingly increased. I prefer to inject novocain rather than cocain. A second point is that with caudal anesthesia more relaxation of the lower ureter is obtained than by the local injection of cocain or novocain, and the cystoscopic examination is also much more easily accomplished.

In conclusion, I wish to call attention to the following points: (1) the mortality from litholapaxy is far lower than from cystostomy; (2) the difference in mortality more than compensates for the moderate increase in the recurrence of stone after litholapaxy, and (3) the use of caudal anesthesia and permanent urethral drainage renders lithotomy available to a large number of patients who would otherwise be subjected to the greater risk of cystostomy.

DR. GILBERT J. THOMAS, Minneapolis (closing): I wish to thank Dr. Crenshaw for mentioning the danger of using cocain in the ureter or urethra. Novocain is much safer. A fistula resulting after the removal of a stone in the lower part of the ureter has not occurred very often in my experience. In one instance a stricture was present just outside of the bladder so that it was necessary to pass bougies into the bladder to dilate the stricture, the ureter having been opened above this point. To prevent fistula caused by the possible contraction of the stricture, a Garceau catheter, No. 10 French, was passed into the bladder and the small end was pushed through the ureter to the kidney pelvis. This catheter acted as a drainage tube and as a splint so that stitching of the ureter could be more thoroughly done. The drainage after all operations on the ureter should not contain gauze but gutta percha. In no instance, except where the kidney was totally destroyed or in which some obstruction remained in the ureter have I seen a fistula that lasted more than about two weeks.

THE TRAINING OF THE LABORATORY TECHNICIAN*

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The practitioner when called upon to secure laboratory aid in the diagnosis of obscure conditions is dependent to a very large extent on the character of the work of the technician. Evidence of the importance of the problem of obtaining good technical workers is found in the ever increasing demand for those who are properly trained and upon whose results dependence can be placed. Up to the present time technicians have been trained in different ways. Among the number are included those possessing various qualifications and experience as laboratory workers. The demand has been such that it has been necessary to draw upon all available help. Good laboratory technicians are desired by physicians and surgeons in private practice, by groups of physicians, by large clinics, hospital laboratories, clinical laboratories, state and city boards of health and elsewhere. Such an impetus has been given to the necessity for clinical laboratory work in connection with all medical institutions that an alarming shortage of properly trained technicians has resulted.

Those who are now engaged as technicians in laboratories have picked up training in various ways. Many have had the advantage of a part or all of a college or university course and have gained training in different laboratory procedures through actual experience under the direction of competent pathologists and bacteriologists. Some of the most proficient may have had little or no preliminary education but are naturally adapted to the detailed and painstaking procedures in the clinical diagnostic laboratory. The majority of laboratory technicians at the present time are women, although the demand is increasing to such an extent that men are becoming attracted to this line of work.

Grant and Wilson relate some of their experience in employing laboratory technicians. They state it has been their experience within a year to have employed at least thirty technicians, all of

whom have had various opportunities for experience and training. Some had Bachelor degrees; some had M.D. degrees. The authors state that "unfortunately not two per cent of this number could properly take care of the work they claimed to be efficient in. The following question has been asked of fifty applicants who have applied to us for positions, claiming good working knowledge of bacteriology, and in no case has it been properly answered: 'How do you differentiate streptococcus from pneumococcus?' The answers were numerous and varied but none were answered correctly. A few were able to do a little blood chemistry, but none seemed to understand the underlying principles of chemical analyses. It is only the occasional one that is able to correctly make up a normal solution."

In order that there may be no misunderstanding regarding the points which this paper attempts to emphasize, it should be stated with distinct clearness that the field of activity of the laboratory technician is not that of the clinical pathologist and bacteriologist. The questions regarding the requirements of the clinical laboratories, the training of those in charge and the methods followed in the interpretation of laboratory findings, all of which are occupying space in our current medical literature, should be kept clearly separate in point of view from the discussion of the training of the laboratory technician as it is found in this paper.

Kolmer, Moore and others have discussed the question of general standard requirements for clinical laboratories in an able manner. Tentative conclusions which these authors have reached have to do with the clinical laboratories themselves but to a certain degree they are of direct concern to us, as we consider ways and means for the training of the laboratory technician. Moore has secured the opinions of men whose work and experience entitle them to assist in defining the standards which should be maintained by clinical laboratories. These, modified to some extent by the author, are summed up as follows:

1. The director of a clinical laboratory should be able to act as consultant in the various laboratory reports and in correlating them and other clinical data. The laboratory director, therefore, should be a medical graduate.

2. Many technical methods—most of them perhaps—may be satisfactorily carried out by techni-

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cians. The data arrived at from such methods, however, should be interpreted by specialists.

3. Technical procedures (methods) used in an acceptable laboratory should be the best available, those used and approved by authorities. If it is insisted that only the best modern methods be used in a laboratory, it follows that the technicians employed must be trained in these methods.

4. The equipment of an acceptable laboratory should be such that the proper technical procedures may be carried out. There should be ready access to current scientific books and journals. Clinical data and other pertinent information should accompany the submissions of specimens or other material to the laboratory."

The above requirements are clearly defined and can be carried out by any private or hospital laboratory or other institution, except in one respect, namely the acquisition of properly trained technicians to the staff of the laboratory. The problems, therefore, of training laboratorians as they should be trained and the agreement upon standard methods of procedure have not been solved. These problems are not directly concerned with laboratory directors alone but are of the utmost importance to practicing physicians and surgeons. It cannot be denied that some means must be provided so that those who desire to enter clinical laboratory work as assistants must have mapped out for them some practical, thorough courses of study.

There are many serious-minded individuals who have desired to become proficient laboratory technicians but have had no idea as to how to proceed. Those who have been fortunate enough to secure university training and who are capable and dependable have been able through private study and good tutelage to acquire the necessary knowledge and technique. Various universities and departments of bacteriology have encouraged students to take up the laboratorian profession as objective and many have been trained in this way. Unfortunately, however, unless such training can be given in connection with the medical department of the university, it is inadequate and the student is left at the end of the college course to shift for himself and pick up the necessary training wherever the opportunity may be found. Until such time as pathologists and bacteriologists, including their technical helpers, are paid salaries commensurate

with the time, labor and study involved and the class of service rendered, few students will be able to take a university course leading to laboratory technician as objective. Many of these who can complete such a course would fall within the class of workers mentioned in quotation above from Grant and Wilson. It appears clear, therefore, that to fill present needs those who desire to become laboratory technicians should be able to avail themselves of specially prepared courses.

The good laboratory technician must be extremely patient, an indefatigable worker, one who possesses common sense and judgment which is not subject to prejudice. It should be most emphatically stated that the laboratorian should be one whose moral character is irreproachable. He should be one concerning whom there is never the slightest suspicion of untrustworthiness or dishonesty in word or deed. The next requirement involves previous training. The more education one has the better, but at the present stage of our development in this line of work, college training while desirable is not at all necessary. A similar statement regarding high school education cannot be made with equal emphasis. However, high school training is certainly not a necessary requirement. Education, travel, development of character and personality are of great value to any worker. However, for the specific work involved, at the present time, it is not necessary that the efficient laboratory technician should furnish prerequisites. Most laboratory directors agree in preferring technicians of common sense and dependable character regardless of previous educational advantages or other accomplishments.

Heretofore, the best training which has been provided for laboratory technicians is that given through individual instruction in various clinical laboratories. This method of training, however, is not sufficient to meet present-day needs for laboratory technicians. Neither does it afford some of the advantages pertaining to class work and didactic teaching. Apprenticeship does not compare in thoroughness or in satisfactory results with a regular, scheduled, well balanced course of instruction, including lectures, recitations, quizzes and laboratory practice periods. In following the latter method, of course, it is necessary that competent instructors be provided and that subjects included in such a course should be handled by those who are specialists.

Such a course should be so mapped out that proper attention is devoted to fundamental principles involved in the different subjects taught. Sufficient theory should be presented to give the student the groundwork upon which to base future development in study and in technique. Such work for the student can be provided only in connection with a regular course in which class room and laboratory practice periods are carried out according to regular schedule. Individual instruction cannot be given in this way except at the expense of so much time that it is prohibitive.

For the proper training of the successful laboratory technician, there cannot be an over-emphasis of the clinical significance of laboratory findings. Some may contend, unjudiciously, that it is the laboratorian's business to perform the tests, that it is entirely unnecessary, probably undesirable, for the technician to know anything about the relation of the results to the physician and to the patient. Only the undesirable technician will be content with such limitations. The student technician early in the course should be held and fascinated by the interesting results attending various tests and their meaning. There are many good reasons for this, which obviously appear on the surface. In any line of work there is opportunity for use of the head as well as the muscles. Certainly in conducting laboratory technique, it is desired that the procedures should be carried out by an intelligent, interested, sympathetic technician rather than by a mere machine. When the technician understands the clinical significance of many findings the work is transformed from mere mechanical drudgery to a vocation which is fascinating, interesting and above all a service to mankind. Moreover, unless the technician is taught along this line, he will fail to grasp the point of view of the physician.

The properly trained laboratorian should thoroughly understand the principles of medical ethics. He should be brought to an understanding of the doctor's problems for the good and sufficient reason that he is employed as a faithful helper and co-worker of the physician.

It is scarcely necessary to dwell in detail upon the various subjects which should be included in a course such as is suggested.

The student technician should receive thorough instruction and practice in routine clinical bac-

teriology, elementary chemistry, urinalysis, blood examination, gastric analysis, blood chemistry and serology. From experience, it seems best to build such a course around a comprehensive fundamental course in bacteriology as the framework. The instruction in chemistry should include the fundamental principles of simple inorganic chemistry. In the laboratory practice in chemistry there should be incorporated the preparation of normal solutions, use of burette and pipettes, titrations, simple chemical tests, explaining the reactions noted in urinalysis, and such other procedures as are of fundamental importance in conducting clinical laboratory tests. The course in bacteriology should consist not only of the study of the common pathogenic organisms but should include such subjects as germicidal assay, bacteriologic study of milk and water, disinfection of the hands, animal inoculation, and the class work should include such principles of bacteriology as are found in the medical college course. With such a course in bacteriology as the groundwork it is not difficult to build up the other subjects around it in such a way that considerable theory is included in the course, thereby affording a basis for further independent study, and some degree of training in methods which can be followed later in an endeavor to acquire better knowledge. Experience has justified the assumption that it is well to include in the curriculum of such a course practical text-book and lecture work in the fundamentals of general anatomy and physiology, materia medica, including only the fundamental principles and the characteristics of some of the few of the most common drugs, and medical terminology, for the purpose of acquainting the student with the most important words and phrases in every-day medical vocabulary. There should also be included some instruction in parasitology. The student should be brought into contact with current medical and scientific literature and taught to note, abstract and fill useful references. Autopsies conducted by an experienced pathologist and teacher afford invaluable aid to the student. Finally, much stimulation can be given by incorporating in such a course one or two lectures each by specialists along various lines of medicine, surgery and pathology. Practical pointers on the handling of nervous and mental cases, children, proper methods of taking case histories, special methods of laboratory examinations in eye, ear and nose, practice in in-

ternal medicine and in surgical practice should be discussed before such students by men who are specialists along these lines. For general information practical roentgen-ray work should be demonstrated.

The problem of instruction in roentgen-ray work is becoming more and more acute. Many of the smaller hospital laboratories desire the services of technicians who are able to handle all of the routine clinical laboratory work and who have had experience in caring for roentgen-ray laboratory work. At present practically the only way open for the technician to acquire roentgen-ray training is to pick up the necessary technique and information while acting as assistant to those in charge of the roentgen-ray laboratory. It seems that, as conditions are at present, institutions should not expect proficient clinical laboratory technicians to possess more than ordinary information concerning roentgen-ray technique. Preparation of the patient, developing of plates, filing of plates and care of the roentgen-ray laboratory can quickly be acquired by an apt individual who is a successful clinical laboratory technician.

One other phase of clinical laboratory work should also be mentioned, namely basal metabolism. At the present time satisfactory results from basal metabolism tests cannot be expected unless this work is conducted by those specially trained. Those who have had experience will, we believe, agree that for the proper execution of basal metabolism, a university graduate is required. It is a recognized fact that those laboratories which are doing basal metabolisms successfully are depending upon the services of those who are specially trained in physics and chemistry, who have had special training in basal metabolism and who devote their entire attention to this work. It is assumed, therefore, that at the present time instruction in basal metabolism is not required by the clinical laboratory technician.

Having disposed of these several points, the question now arises as to how much time is necessary to impart to the student the general course of instruction as suggested above. Experience has shown that six months' time, while it may not be abundantly sufficient, represents the minimum period required to give such a course to the average student who is normal physically and mentally.

A student who desires to take up this work, who is willing to put heart and soul into it regardless of sex, age within certain limitations, and previous education, can in six months' time master the principle and technique of routine clinical laboratory work. At the completion of such a course the student is then ready for apprenticeship practice. If his circumstances will permit, he can enter a well-selected laboratory as a volunteer worker and, depending upon the native ability of the individual, after a few months he should be able to take a position as chief technician in the average chemical laboratory. Most students who are not so fortunately situated can secure positions as assistant technicians and by applying themselves are able to work up toward positions more desirable.

An outline of such a course as described above occupying a period of six months may be arranged as follows:

GENERAL LECTURES

1. General Bacteriology	24 hours
2. Immunology and Serology	12 hours
3. Serum and Vaccine Therapy	12 hours
4. Chemistry, general and physical ...	24 hours
5. Gastric analysis	7 hours
6. Blood chemistry	10 hours
7. Materia Medica	12 hours
8. Urinalysis	20 hours
9. Anatomy and Physiology	30 hours
10. Medical Terminology	30 hours
11. Interpretation of Laboratory Results	5 hours
12. Hematology	20 hours
13. Parasitology	6 hours
14. Office Practice and Roentgen Ray...	5 hours
15. Autopsies	5 hours

227 hours

SPECIAL LECTURES

1. Nervous and Mental Diseases	2 hours
2. Children	2 hours
3. Surgery	2 hours
4. Internal Medicine	2 hours
5. Nose and Throat	2 hours
6. Communicable Diseases	1 hour
7. Genito Urinary	2 hours
3. Hospital Practice	2 hours
9. General Medicine	2 hours
10. Life Insurance Urinalysis	1 hour

18 hours

LABORATORY PERIODS

1. Bacteriology	100 hours	25 periods
2. Chemistry, Materia Medica, Blood Chem- istry & Gastric Analy- sis	80 hours	20 periods
3. Hematology (Complete Blood Examination) .	80 hours	20 periods
4. Urinalysis	80 hours	20 periods
5. Laboratory Diagnosis (Clinical Material) .	60 hours	15 periods
6. Serology (Wasser- manns, agglutination and complement fixa- tion, blood grouping, etc.)	68 hours	17 periods
7. Tissue Technique	12 hours	3 periods

480 hours 120 periods

Considerable confusion exists regarding the question of standardizing clinical laboratories, licensure of technicians by federal or state authority and the standardization of methods of procedure. Gradwohl recommends "the recognition of the technician by some kind of board with authority to pass upon qualifications and give a certificate of merit to those who deserve it." The competent technician who is serious and whose work is of high order should be protected by receiving some stamp of approval or some authoritative recognition. Laboratory technicians are as deserving of such recognition as the trained nurse. How can laboratory technicians be recognized, however, unless some standard methods are provided as a basis upon which to grant official certificates to such workers. Some of the life insurance companies have standard methods which are relied upon by their association of medical examiners. On the other hand there is diversity of opinion among those experts on such questions as the best tests whereby albumin in urine is to be detected, how many casts present in a given urinary sediment should eliminate the applicant and how to estimate the number of casts, the significance of pus cells in such a sediment and how many may be allowed. Interrogate different clinical laboratory directors regarding methods used in making cell counts in spinal fluid, and inquire as to the methods used in standardizing autogenous vaccines. These are only a few well known illustrations of technical methods concerning which there is not entire agreement.

Therefore, without further discussion, it would seem that there is an urgent need, in such procedures as are possible, for the establishment of some standard laboratory methods. Of course, this cannot be done within a limited time but some of our existing organizations could lend great aid to this work. Such work is needed not only for the benefit of the medical profession but for those who are conducting clinical laboratory work, and for the laboratory technicians themselves. After certain steps have been taken and certain standards of laboratory technique and methods have been accepted then can the efficient laboratory technician be recognized by proper license.

SUMMARY

1. The rapidly growing demand for laboratory technicians requires an analysis of the present day qualifications of the general technician.

2. The suggested standardization of the clinical laboratory and the requirements for such render it necessary that constructive thought should be given to the proper training of laboratorians.

3. A sufficient number of proficient technicians cannot be trained through individual instruction. Moreover, individual instruction and laboratory practice as volunteer workers should follow a prescribed course of class work and laboratory training.

4. Under present conditions rigid insistence upon the maintenance of definite prerequisites for those desiring to become laboratory technicians, would be ill-advised.

5. Student technicians should receive a defined, carefully planned course in theory. A certain portion of time should be devoted to text-book assignments, quizzes, lectures and demonstrations.

6. The course should include proper allowance of time for the interpretation of laboratory findings, the elements of medical ethics and the suggestions of specialists who place dependence upon different phases of clinical laboratory work. In other words, every effort should be made to develop the student into a sympathetic, earnest, serviceable technician.

7. At the present time the minimum period for such a course, including theory and didactic teaching is six months. A definite course of studies for such a six months' course is submitted.

8. Clinical laboratory technicians should re-

ceive proper recognition in the form of an official certificate or license from state boards of health or other authorities. Moreover, technicians should be graded according to ability, training and experience. Licenses should be issued to those who merit recognition as chief technicians or first assistants to the directors of laboratories, and to assistant technicians. A certain period of successful work as assistant technician, regardless of previous educational advantages, should entitle one to apply for license as chief technician.

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THE VALUE AND IMPORTANCE OF BLOOD CHEMISTRY IN CLINICAL MEDICINE*

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Chemical analysis of the blood is rapidly becoming a laboratory procedure of considerable importance, although it has but recently entered the field of practical usefulness. However, its utility as a diagnostic, prognostic and therapeutic aid is made use of by too few physicians, owing, no doubt, to the fact that to many the phrase "blood chemistry" connotes elaborate procedures carried on in physiological-chemical laboratories of universities or other research institutions. As

a matter of fact, the technic of chemical blood analysis has been greatly simplified by such men as Folin, Benedict, Bang, Lewis, MacLean and others, and many tests have become available to practically all physicians who wish to practice scientific medicine. Moreover, simple methods for the preservation of the blood have been devised which make it possible for those who have not the facilities for performing the tests themselves to send blood to the proper laboratories for analysis.

Information which is not obtainable from urinalysis or other tests is often furnished by blood chemistry. The urine may contain abnormal elements such as albumin, casts, red blood cells, et cetera, or abnormal amounts of normal elements such as urea, chlorides, et cetera, which findings only show what the kidneys are excreting, but what the kidneys are unable to excrete is often of greater importance, and this is best ascertained by chemical analysis of the blood.

The number of elements that can be tested for and are being tested for in the blood is very large, but the technic of many of them is thus far too cumbersome to serve any function to the practising physician. Those elements that may be tested for quantitatively by relatively simple processes are urea nitrogen, sugar, creatinine, uric acid and the alkali reserve or carbon dioxide combining power of the plasma. The total non-protein nitrogen is also often determined, but its estimation as a rule furnishes very little extra data over that obtained from the estimation of urea nitrogen alone. In a few exceptional cases the cholesterol and chloride content and the diastatic activity are obtained. In what follows, only such chemical changes of the blood will be discussed as have been proven of undisputed clinical importance.

Chart I shows the important blood changes in diabetes, nephritis and gout, which diseases I shall consider for differential diagnosis. As is well known, the variations in the quantities of the above substances pass gradually from the normal to the pathological so that in many instances the blood chemistry findings, though interesting, are inconstant and require very careful study and interpretation. For this reason I am not discussing a number of border-line conditions such as eclampsia, hypertrophied prostate with obstruction, cancer, et cetera, but only, as stated above, such findings as are of undisputed clinical importance.

*Presented before the annual meeting of the Minnesota State Medical Association, Minneapolis, October, 1922.

CHART I.*

	Normal Average	High Normal	Diabetes	Nephritis	Gout
Urea Nitrogen.....	10-15	20	.....	20-300	....
Sugar % .....	.08-.12	0.15	.15-1.2	.08-.26	....
Creatinine	1-2.5	3	.....	3-30	....
Non-Protein Nitrogen	20-30	40	.....	40-350	....
Uric Acid	1-3	3.5	.....	4-25	4-10
CO ₂ Combining Power %	50-75	Low 45	50-10	50-15	....

Diabetes.—Glycosuria is practically always a pathological condition. Contrary to the findings of Benedict and others that sugar may be found normally in the urine in very minute quantities, Folin¹ and his co-workers have very recently been able to establish that the reducing body so often present in the normal urine is not glucose, but some other substance excreted by the kidneys, which is capable of reducing copper solutions. One instance where there is often misinterpretation as to the presence of glucose in the urine is when lactosuria obtains during the latter months of pregnancy and during lactation; the reducing substance mistaken for glucose is lactose.

But even the definite presence of glucose in the urine is not indicative of diabetes. The kidneys in their excretory function react differently to different substances. One class of substances, which includes sugar, requires a certain concentration in the blood before there is any overflow into the urine. The point of lowest concentration at which the overflow occurs is known as the renal threshold. The other class of substances, the class that includes urea and chlorides, for example, passes through the kidneys into the urine from any concentration in the blood. Such substances are said to have no renal threshold. The renal threshold varies for different substances. For sugar, the concentration in the blood generally must rise to .16 or .17 per cent before any sugar will filter through into the urine. If the sugar in the blood therefore is of any lesser concentration, no glycosuria will occur. It is very evident then that normally when the blood concentration of sugar is about .10 per cent there will be no glycosuria.

Not infrequently, however, there are certain cases which will present glycosuria when the blood sugar concentration is .10 per cent or even less. In these cases it is thought that the kidney has lost its safety valve function or its renal threshold for sugar, and that the sugar will then overflow into the urine

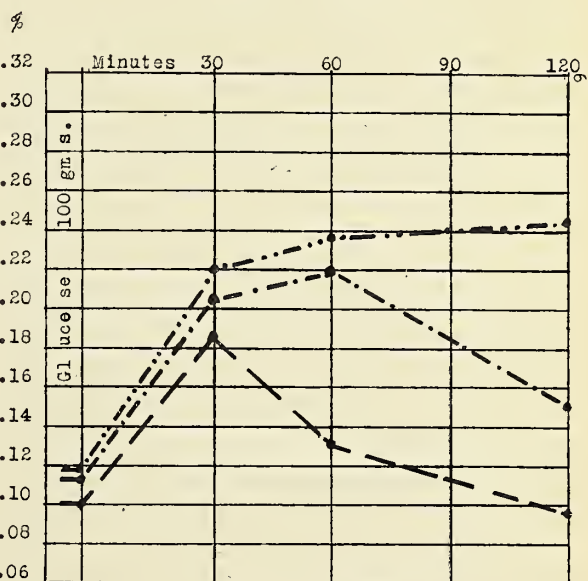
under any concentration. When glycosuria occurs with a normal blood sugar, the condition is known as renal diabetes. From the therapeutic as well as the diagnostic standpoint, it is important to recognize such cases because they do very poorly under a regimen for diabetes mellitus. (The renal threshold can also be lowered experimentally by the injection of phloridzin.)

The differential diagnosis between the glycosuria of diabetes mellitus and the glycosuria of renal diabetes can seldom be made without the analysis of the blood sugar. A test that is commonly used for this purpose is the alimentary glucose tolerance test. There are several modifications of this test, and the most scientific one is that suggested by Beeler,² Fitz and others. However, the simpler test has proven very satisfactory, that in which 100 grams of glucose dissolved in about 300 c.c. of water, to which the juice of one lemon has been added, is administered to the patient after about fourteen hours of fasting, and the blood sugar is estimated just before the administration of the sugar, and at one-half hour, one hour, and two hour intervals after the administration.

The normal blood sugar curve after such a test shows a maximal rise at the end of one-half hour after ingestion, a marked drop after one hour, and

CHART II.

Typical Curves



— — — — — Normal curve
 - - - - - Mild diabetic curve
 Severe diabetic curve

*The above figures represent the number of mgm. per 100 c.c. of blood, except in the case of sugar and CO₂, where they represent per cent.

the return to normal within two hours after ingestion. (Chart II.) In cases of diabetes mellitus there is a sharp rise which often continues up to the two hour period and sometimes even longer, and the return to normal may be delayed up to from four to eight hours after the ingestion of the glucose. In a case of renal diabetes the curve is entirely normal. In what may be termed the pre-diabetic state, both the rise and fall in the curve may be delayed, but not to such an extent as in a well-established case of diabetes.

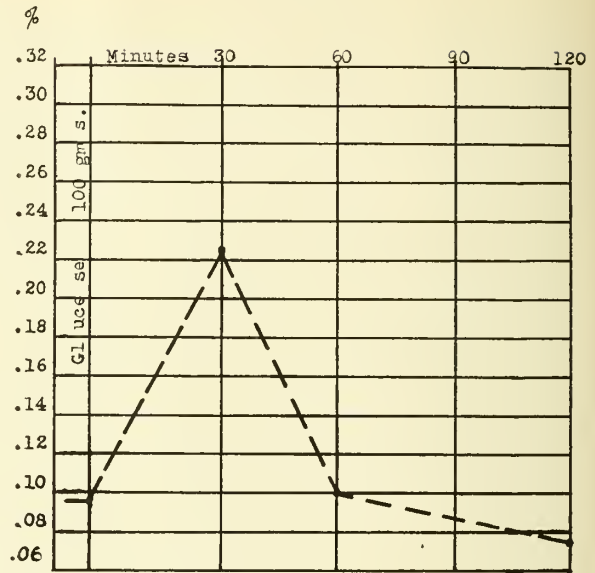
As has been mentioned above, failure to differentiate renal diabetes from true diabetes may result in improper management of the case, many instances of which are cited in the literature. A good example of this is the one reported by John³ of a girl, aged 18 years, whose condition was diagnosed diabetes because of the presence of sugar in the urine. She was placed on the "Allen Treatment" with the result that in four months she dropped from a normal weight of 123 pounds down to 63 pounds. She became a mere skeleton. In spite of the treatment she continued to excrete sugar in the urine. A sugar tolerance test was then made which established the fact that the patient was not a diabetic at all, since she gave a perfectly normal curve. She was then placed on a high caloric diet containing a large amount of carbohydrates and she improved very rapidly. Her blood sugar at no time rose above the normal during the treatment.

I have had a number of similar cases where patients have shown sugar in the urine but have had absolutely no other evidence of diabetes mellitus. The glucose tolerance tests revealed entirely normal sugar curves. I will cite several cases for illustration.

Case 1.—Mrs. J. J. M., aged 35, married, complained of gastric distress with bloating and belching, some constipation, some shortness of breath, no excessive thirst, no nocturia, no urinary frequency. Patient drinks very little fluid of any kind. Physical examination showed a woman 5 feet, 2 inches in height, weighing 176 pounds. Temperature, pulse and blood pressure normal. She was about 45 pounds overweight. Her general examination gave very little of importance. The blood examination was negative. Repeated urine examinations showed sugar present on practically every occasion, from a small trace to a large amount. She was given a sugar tolerance test with a normal result as shown in Chart III.

The test suggested at once that this was not a case of diabetes mellitus. She was placed on a slightly restricted diet because of her obesity and was told that she would

CHART III.



have to be watched so as to be sure that the condition would not turn into true diabetes. Six months later she again reported, and was found to be in excellent health, presenting no new symptoms. A blood sugar at this time again gave an absolutely normal result. The urine again showed a rather large amount of sugar. This case is unquestionably one of renal diabetes.

Case 2.—Mr. R. S., aged 35, married, came complaining of pressure and fullness in the stomach with belching. He experienced a dull ache when his stomach was empty. A glass of milk or alkali relieved the condition. Physical examination showed a man 5 feet, 3.25 inches in height, weighing 146 pounds, pulse 84, blood pressure 130-78, no special findings. In eight urinary examinations sugar was present from a faint trace to a fairly large amount in all but one. Blood sugar tests on three different occasions during a period of 10 months gave from .09 to .109 per cent. The gastric analysis showed a definite hyperacidity. The patient was placed on a diet for hyperchlorhydria, on which his symptoms disappeared. He has gained in weight and during 10 months observation has shown no symptoms or signs of diabetes mellitus, though his urine still contains sugar.

Not only is blood chemistry necessary for differentiating renal diabetes from true diabetes, but it is quite essential to the proper treatment of chronic cases of diabetes. Often when the disease is actually progressing unfavorably because of marked hyperglycemia, in some cases as high as .26 or even .30 per cent, the condition is not detected because of the absence of sugar from the urine. This absence of glycosuria in spite of the marked hyperglycemia occurs not infrequently in cases of chronic diabetes as a result of a rise in the renal threshold. The danger of administering

a diet based on the urinary findings alone in these cases is obvious, for it is well-known that the carbohydrate metabolism suffers and the sugar tolerance become lessened whenever hyperglycemia persists regardless of whether or not sugar be present in the urine.

An interesting case where sugar in the urine first led to the diagnosis of diabetes, but where the blood sugar tests pointed strongly against this diagnosis, is the following:

Case 3.—Mr. A. W., aged 45, married, consulted me on April 8, 1922, because of pain in the back radiating into the abdomen, of about six weeks duration, with constipation, loss of weight and a progressive weakness. He stated that about five months previously he had been refused insurance because of the presence of sugar in the urine. An able doctor had diagnosed his condition as diabetes mellitus and he was placed on a corresponding diet, which he followed very carefully for about three months. He stated that the sugar was found in the urine on about four or five occasions. He lost about 20 pounds in weight during this treatment.

When I saw him, his physical examination revealed nothing of importance outside of some tenderness in the epigastrium and in the left inguinal region. In a series of about forty examinations of the urine, sugar was found present only three or four times.

The blood sugar gave unusual results. On the same diet, he gave .10 per cent on one occasion, .13 per cent on three occasions, and .19 per cent on another occasion. The sugar tolerance test gave an absolutely normal curve. The irregular and inconstant presence of sugar in the urine on an unrestricted diet, the peculiar, atypical findings in the blood sugar, together with the normal sugar tolerance test, practically ruled out the diagnosis of diabetes mellitus. The peculiar sugar findings both in the blood and the urine together with the persistent and continuous pain in the lower dorsal region radiating into the abdomen, the progressive loss in weight and the negative physical findings throughout the long period of observation suggested the diagnosis of a pancreatic disturbance, either stones, chronic pancreatitis, or malignancy. The latter condition seemed to me the most probable.

About nine months after the first discovery of sugar in his urine he suddenly developed jaundice. This substantiated the tentative diagnosis of malignancy of the pancreas. A laparotomy was advised. At the exploration, all the findings in the abdomen were negative except for a large, hard, almost cartilaginous mass in the region of the head of the pancreas. This completely confirmed the diagnosis of cancer of the pancreas. In this case, examination of the urine unsupported by proper blood chemical tests had made a diagnosis of diabetes mellitus, whereas the greatly varying amounts of sugar in the blood and the normal sugar tolerance test as revealed by the blood analysis precluded such a diagnosis.

John⁴ in a study of 715 observations found that 99, or 13.8 per cent, showed glycosuria without

hyperglycemia, and that 131, or 18.3 per cent, showed hyperglycemia without glycosuria. Such findings, which are not uncommon with most observers, demonstrate that many non-diabetic patients are being treated as diabetics, and many diabetics, especially in the earlier or pre-diabetic stage, are entirely overlooked. More extensive use of blood sugar analyses would certainly help to detect the earlier and milder cases of diabetes and would thus result in more successful treatment. Diabetes, like Bright's disease, does not develop suddenly or over night, and if the tendency to diabetes can be detected early, the diabetic problem becomes greatly lessened. When one realizes that there are about a million diabetics in the United States, one sees the great importance of such early recognition.

Acidosis.—A serious complication of diabetes is acidosis. The degree of acidosis can be ascertained by a number of laboratory methods, but the simplest one in use at the present time is that of determining the alkali reserve or the carbonic acid combining power of the plasma. As is well known, blood is alkaline which in terms of the hydrogen ion concentration is expressed as Ph 7.4. The ability of the plasma to hold and carry carbon dioxide is dependent on this alkalinity. If the alkalinity of the blood is reduced so as to approach the neutral point, its ability to combine with CO₂ is lessened and this may be determined by a rather simple test in which the Van Slyke apparatus is used. The normal combining power is from 50 to 75 per cent by volume of blood. The low normal is about 45 per cent, and below this figure the symptoms of acidosis develop. In very severe cases of acidosis the combining power of the plasma may be reduced to 20 or even 10 per cent of the blood volume.

The acidosis in diabetes results from the improper oxidation of the food consequent to the disturbed carbohydrate metabolism. This results in the accumulation in the blood of certain volatile acid bodies of the beta oxybutyric acid group.

Another type of acidosis may obtain in conditions like nephritis, acute infections, post-ether anesthetics and certain other states. The acidosis in nephritis is usually due to the retention and accumulation in the blood and tissues of non-volatile acid products of metabolism such as acid phosphates, which the kidneys are unable to eliminate because of deficient function. In many cases,

though the symptoms, such as air hunger, may be present, the condition is overlooked because of other signs of impending uremia. However, if the acidosis be recognized, as can be done by the determination of the alkali reserve in the blood, the administration of sodium bicarbonate may give definite relief, though temporary, and the patient may come out of the coma and regain consciousness. The degree of acidosis in nephritis usually, though not always, runs parallel with the degree of impairment of the renal function, but it rarely is as marked as in diabetes.

Nephritis.—The presence of high blood pressure together with certain urinary findings and a few indefinite symptoms often lead to the diagnosis of nephritis, whereas recent studies have shown that these findings may be due entirely to a condition known as essential hypertension and not to any true renal insufficiency. Blood chemistry will reveal entirely normal findings in essential hypertension except in the very late stages, while in true nephritis there is usually found increased retention products such as urea, creatinine and uric acid in varying amounts. Of course, the estimation of renal function should not be limited to blood chemical analysis alone; the PSP test and the Mosenthal concentration test are very valuable adjuncts, but the importance in the blood chemistry test, as already stated, lies in the fact that it best determines what substances the kidneys are unable to excrete, thus giving an index to the amount of damage present.

Uric acid is excreted with great difficulty and is therefore the first substance to show an increase in the blood in kidney impairment. With more advanced kidney insufficiency, urea will gradually fail of excretion. Creatinine is eliminated more readily than either uric acid or urea and it rarely rises above the normal before the quantity of urea has been about doubled.

The normal amount of uric acid in the blood is from 1 to 3 mgm. per 100 c.c. In small degrees of renal insufficiency it may lie between 4 and 10 mgm. and in some cases of nephritis it may be even higher. Urea nitrogen normally is present in amounts from 10 to 15 mgm. per 100 c.c. The high normal is 20. The quantity may increase enormously in cases of renal insufficiency, often to as high as 300 mgm. or more. Creatinine is normally present in amounts from 1 to 2.5 mgm. In advanced cases of nephritis the creatinine may

rise to 10, 20 or even 30 mgm. per 100 c.c. When the quantity increases to 5 mgm. or more, the case takes on a serious aspect and unless the increase is due to some sudden acute illness, the outcome is almost invariably fatal within a short time. Not infrequently cases of nephritis present themselves which under proper dietary treatment and rest improve clinically and give the impression of a favorable outcome. However, the finding of creatinine of over 5 mgm. indicates a very serious condition with a probably fatal termination within a year or two. The determination of the creatinine in the blood in these cases is therefore of great prognostic import.

Several months ago I saw in consultation a girl 20 years old who had just been operated on for an old dislocation of the elbow and had developed definite symptoms of uremia. She had high blood pressure and had given a history of edema, and these had suggested that a blood chemistry might be indicated. However, the chemistry report was not returned until after the operation. Had the findings been known before the operation, the patient would certainly not have been subjected to the surgical procedure. The blood chemistry gave findings of an advanced case of glomerulo-nephritis, with urca nitrogen 77 mgm., creatinine 8.33 mgm. and blood sugar .156 per cent.

Under a restricted diet and other therapeutic measures she recovered from her stupor and began to feel almost entirely well. Repeated examinations of the blood, however, revealed the persistence of the retention products in large amounts, and though subjectively she felt well it is fairly certain that there will be a fatal termination within a year or two.

A similar case was treated at the University Hospital, when a young boy entered in the spring of 1920, presenting all the symptoms and findings of an advanced case of chronic glomerulo-nephritis. When he left after a stay of several months, he showed a marked improvement, giving his family the impression that he had completely recovered. The blood chemistry, however, revealed the presence of 8 mgm. of creatinine, on which findings the family was told that in spite of his apparent improvement he was still very seriously ill. He returned to the hospital in about six months, where he died a short time afterwards in a state of coma.

Another instance of the importance of blood chemistry for diagnosis is illustrated by the follow-

ing case which came to my attention through the autopsy findings.

Case 4.—Mr. F. M., aged 23, stated that he had been well up to the latter part of May, 1922, with the exception of an attack of influenza in 1919, although for several months previous to May he had not felt altogether well, having had vague and indefinite symptoms. He stated that he was voiding large amounts of pale urine. In the latter part of May he had developed sore throat with pain and swelling of his joints. On July 6 he was taken to a hospital, where he had profuse sweating, some vomiting, an irregular temperature and marked weakness in addition to the arthritis and the sore throat. About a week after his entrance he became semi-stuporous, his pulse was full and slow and he breathed heavily. His response was very sluggish and he resisted passive motion. The stupor, the joint symptoms and the symptoms of meningeal irritation increased in severity. A diagnosis of arthritis with meningeal irritation was made.

A spinal puncture was done and the spinal fluid proved negative. A number of urine examinations showed a trace of albumin, no sugar, no casts, a few red blood cells and a few leucocytes. Chemical analysis of the blood was then made with the following findings: urea nitrogen, 153 mgm.; creatinine, 11.2 mgm.; blood sugar, .26 per cent. This pointed definitely to the diagnosis of uremia. The patient died shortly afterwards, and at the post-mortem there was found a very advanced, subacute glomerulo-nephritis. This case shows that the urine can present only minor degrees of pathological findings in spite of the presence of profound lesions in the kidneys. Indeed, the urinary findings in this case had apparently been improving while the course of the disease was really progressing unfavorably. It is of interest to note that although no sugar was found in the urine at any time, there was a marked hyperglycemia present, the blood sugar being considerably above the normal renal threshold finding. This of course was due to the inability of the kidneys to excrete the sugar. Because of the meager urinary findings in this case, the final diagnosis would most probably have been incorrect were it not for the blood chemistry.

A proper differential diagnosis of the various comatose states presenting symptoms of meningeal irritation is often very difficult, but, if a blood chemistry test be made, one can at least determine whether the condition is due to either of the two more common causes, uremia or diabetic coma.

The following case illustrates how an erroneous diagnosis of nephritis may be made in cases of hypertension where insufficient laboratory tests are done.

Case 5.—Mr. H. G. B., aged 40, was seen on September 14, 1921, complaining of kidney trouble, weakness and constipation. He stated that in the summer of 1918 he was treated for stomach trouble. For the past few years he had been suffering with headaches. In the fall of 1918 he had influenza, from which he recovered very slowly. He continued having occasional attacks of distress in the epigastrium. In December, 1920, he was put to bed for

two weeks on a milk diet with a diagnosis of kidney trouble. In the latter part of August, 1921, he was again put to bed on a very restricted diet for six weeks with the diagnosis of nephritis. In the middle of September, when I saw him, he was about 18 pounds overweight, and had a blood pressure varying from 158 to 178 systolic, over 103 to 116 diastolic. His heart showed moderate enlargement both to the right and to the left. There were no murmurs and no thrills. Examination of the urine repeatedly showed a faint trace of albumin with a few hyalin casts and a few leucocytes. His blood chemistry showed entirely normal findings of 2 to 2.37 mgm. creatinine, 14 to 15.4 mgm. urea nitrogen, .13 per cent sugar, and an alkali reserve of 70. The absence of renal involvement was substantiated by the other kidney function tests. The Mosenthal test showed a good concentration and the only variation from the normal was a rather large amount in the night quantity of urine. The PSP test gave 49 per cent excretion the first hour and 15 per cent the second hour, total 64 per cent in two hours.

The physical and laboratory findings therefore indicated that this patient was not suffering from glomerulo-nephritis (Bright's disease) but from what is known as essential hypertension. The treatments of the two conditions are obviously quite different. One would hesitate to put a hypertension case to bed for any considerable period of time unless there were signs of impaired cardiac compensation or of apoplexy, since absolute rest in bed in such cases tends to weaken the heart muscle rather than to improve the circulation. This patient under a regime of a slightly restricted diet with short periods of rest during the day and proper attention to the bowels has enjoyed very good health during the past year. The change in the diagnosis in this case from nephritis to essential hypertension was not made on the blood chemistry alone, but the blood chemistry was a very important factor in determining the final diagnosis.

Gout.—I wish to mention one more condition in which the blood chemistry has definite value. Occasionally it is necessary to make a differential diagnosis between gout and arthritis. In gout, the blood generally shows an increase in the uric acid, rising to from 4 to 10 mgm. per 100 c.c. In cases of uncomplicated arthritis the uric acid generally remains at about the normal figure. Of course, since uric acid is increased in other conditions such as, for example, early cases of glomerulo-nephritis, one must not rely on the blood findings alone for the diagnosis.

SUMMARY

1. Blood chemistry tests have been sufficiently simplified to make them quite generally available to most practising physicians.
2. Urinalysis reveals what the kidneys can excrete, while blood chemistry helps determine what substances fail of excretion.

3. The presence of glycosuria, even if persistent, does not signify that the patient is suffering from diabetes. Glycosuria reveals only the fact that sugar filters through the kidneys into the urine.

4. Normally there is a renal threshold for sugar, with a safe margin above the usual sugar content of the blood. This precludes the passage of sugar into the urine. In diabetes mellitus the carbohydrate metabolism is disturbed, which results in the accumulation of sugar in the blood to the point above that of the renal threshold. Glycosuria therefore results.

5. The severity of the glycosuria is not indicative of the degree of the hyperglycemia present.

6. In chronic cases of diabetes there may be marked hyperglycemia without glycosuria even when there is no demonstrable renal pathology. This condition is explained by a rise in the renal threshold, a rather common finding in diabetes of long standing.

7. Hyperglycemia without glycosuria sometimes occurs in cases of chronic glomerulonephritis.

8. Cases are not infrequent where there is persistent glycosuria with entirely normal blood sugar concentration. Some of these cases may even show a hypoglycemia. Such cases which obviously show an absence of a renal threshold for sugar are known as renal diabetes.

9. Blood chemistry in conjunction with the alimentary glucose tolerance test presents the most accurate and delicate means for diagnosing diabetes in all its stages. Often only by means of these tests can a proper differential diagnosis be made between renal diabetes and true diabetes. It is quite generally accepted that there is no diabetes without hyperglycemia.

10. Cases of renal diabetes usually do poorly under a regime for diabetes mellitus.

11. Blood chemistry is not less important to the surgeon than to the internist. By its aid one can determine, for example, when a diabetic is a good surgical risk or when a surgical procedure is contra-indicated. The same holds true for surgical cases in nephritis and with many other conditions.

12. Careful blood sugar studies are sometimes of value in diagnosing pancreatic diseases other than diabetes. A case is here reported where it

helped materially in diagnosing carcinoma of the pancreas before any definite findings developed.

13. Blood chemistry tests are often of value in the differential diagnosis of comatose states.

14. Blood chemistry is of special value in determining the prognosis of advanced cases of nephritis.

15. A more extensive use of blood chemistry would in many cases result in more accurate and careful diagnoses and would also help to determine the prognosis as well as to control the treatment.

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DISCUSSION

DR. E. L. GARDNER, Minneapolis: I think it is rather fortunate that this paper has followed one discussing the training of laboratory technicians. Blood chemistry done by competent analysts, emphasizing the word *competent*, has come to stay, just as urinalysis has come to stay, but a lot of blood chemistry is being done by incompetent workers who have not had sufficient training. It should be done by well trained chemists who understand the difficulties that may arise in blood analyses.

Dr. Barron in his paper discussed a good many points but did not have time to bring them out fully. I wish to emphasize a few points for differentiating renal diabetes, renal glycosuria and diabetes mellitus. Just now there seems to be an epidemic of renal glycosuria being reported in the literature. I think we have to be careful about accepting the dictum that a low renal threshold is indicative of renal glycosuria. The cases should be tested in other ways. The patient should show symptoms and findings suggesting diabetes mellitus if diabetes mellitus is present, and, conversely, the renal glycosuria cases should be free from symptoms of diabetes mellitus. The renal threshold should be low as a rule, provided there is no nephritis in these cases of renal glycosuria. Then, too, a very important factor, the effect of diet is very slight on these cases of renal glycosuria.

The fourth point, emphasized recently by Joslin, is that these cases must be watched over several years before we can say they are really renal glycosuria. I remember a case with blood sugar running about .07 with large quantities of sugar in the urine which disappeared upon ordinary regulation of diet. This same patient, about eight months later, had a blood sugar of 0.2 per cent, typical of diabetes mellitus. We at first thought it a renal glycosuria but the test of time showed that he had diabetes mellitus.

PAINFUL SHOULDER*

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A consideration of pain in the shoulder joint, from any cause, at once suggests the importance of careful anatomical survey of this region. Without going into detail regarding the complex anatomical construction of the shoulder joint, it will be sufficient here to mention some of the important anatomical points which will help us in making a diagnosis and assist in selecting the proper mode of treatment of some of the common painful conditions of the shoulder.

1. The shoulder joint has a very wide range of motion and is attached to the thorax through the scapula and clavicle by muscles alone.

2. The glenoid cavity and humerus are not in direct contact, but the entire weight of the limb is supported by muscles and not the capsule, the capsule only acting as a supportive factor after the muscles, for some reason, have lost their tone.

3. Muscle balance is of the greatest surgical importance, for in the complex anatomical arrangement it must be remembered that it is the disturbance of this muscle balance, the result of injury or disease, which ultimately causes disability and deformity, to say nothing of the existing pain for which the patient seeks relief.

4. Certain muscles are important: the main abductors being the deltoid and supraspinatus; two important adductors being the pectoralis major and latissimus dorsi. The inward rotators are the teres major, pectoralis major and latissimus dorsi, the outward rotators of the arm being the infraspinatus, teres minor and deltoid. It will be seen that the same muscles, under certain positions of the arm and fixation of the scapula, have, in many instances, more than one function, or a complex duty, to perform.

5. In addition to the muscles and bones the bursae of the shoulder joint are important, particularly the subdeltoid, subscapular and the bursa surrounding the long head of the biceps muscle.

The subscapular bursa lies between the capsule of the joint and the subscapular muscle tendon, and communicates with the joint cavity. The subdeltoid, or subacromial bursa, lies between the deltoid and humerus and muscles covering its upper anterior aspect, and does not communicate with the joint.

6. The circumflex nerve winds around the surgical neck of the humerus and supplies the deltoid muscle.

With these few anatomical facts in mind it will at once be seen that an injury resulting in pain may involve more than one structure, and what appears at first to be merely a simple sprain or contusion may, by the involvement of one structure alone, so interfere with muscle balance as to cause secondary changes.

The early diagnosis in injury of the shoulder may, by appropriate treatment, obviate these secondary phenomena. For instance, in simple strain of the deltoid, if this muscle is put at rest in abduction and the fibers not allowed to stretch, by keeping the arm in abduction, much later disability may be prevented.

If strains or sprains, such as tearing of the tendon of the supraspinatus, which frequently takes the form of a sprained fracture, or tearing off a portion of the tuberosity of the humerus, are definitely located and properly diagnosed, then appropriate abduction and position of outward rotation may allow healing without operative interference, the x-ray being used to aid in the decision. Unfortunately many of these minor conditions are not seen early, and the patient comes complaining only of pain in the shoulder, and from long continued fixation of the arm to the side abduction is lost, or if present the effort causes pain through the shoulder and attachment of the deltoid.

Another type of painful shoulder not involving the muscles or ligaments, but I believe constituting a simple traumatic arthritis, is that form so frequently seen in middle aged or older people who have suffered a fracture at the lower end of the radius by falling on the hand, the force being transmitted through the limb to the lax shoulder joint and a mild arthritis results.

However, the subjective complaint of the shoulder is submerged by the pain of the major injury, namely the fracture, and frequently no complaint

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is made of the shoulder as long as the arm is in a fixed dressing, and it is only after the fracture has healed and motion is attempted that the difficulty in the shoulder is discovered. At this time the trouble in the shoulder often becomes a most important factor and often prolongs the disability to a marked degree. It is in cases like the above that one should be alert to prevent fixation, or adhesions, of the shoulder and preserve power of abduction by instituting appropriate physiotherapy as soon as the acute symptoms have subsided. Diagnosis can only be made by careful examination of the shoulder as well as the forearm.

Other conditions that cause pain in the shoulder and result in fixation of the shoulder are infective processes, presumably from focal infection, causing formation of adhesions in the joint with inhibited motion. These are frequently neglected until disability becomes marked. X-rays may show a diffusion of the joint, and upon passive motion these adhesions may be broken up, and in many instances with appropriate massage and light treatment function can be restored. However, if the joint cartilage has been destroyed it is my experience that efforts of manipulative treatment only make matters worse. In any event the physiotherapy should be of the mildest kind.

Direct contusions of the shoulder involving the circumflex nerve with immediate paralysis of the deltoid are common injuries requiring, upon a positive diagnosis, which is not difficult in the presence of paralysis, immediate protection of the deltoid by placing the arm in a position of abduction on a platform or aeroplane splint, and instituting physiotherapy only after the acute symptoms have subsided.

There are certain painful shoulders which may give no history of injury, the subjective symptoms coming on acutely and x-ray pictures are negative. In this type of case let me sound a word of warning lest these negative x-ray findings lull one into a sense of false security regarding the actual pathology. At this stage often a diagnosis of rheumatism is made. Later, however, fluctuation in the region of the posterior portion of the joint appears and a diagnosis of periarticular abscess is now made and pain continues even if good drainage is established. Additional x-rays at this stage only too often show a necrosis of the glenoid cavity. Therefore, it is well in cases of painful shoulder, without history

of injury, to take serial x-rays and be ready for more radical therapy at the first indication of osteitis.

Finally a word about subdeltoid bursitis. Patients complaining of pain in the shoulder, with or without history of trauma, may be the subject of bursitis. Since Codman first drew attention to this structure the diagnosis of subdeltoid bursitis has become much of a fad, much like as Lovett has already stated that the stock diagnosis of sacroiliac dislocation enjoys a marvelous popularity if pain is present in the proper locality. However, Codman stated that it was his opinion that most minor lesions of the shoulder joint involve the bursa and few involve the true joint, and it is my experience that this lesion is not at all uncommon. While frequently it recovers irrespective of the treatment, it is those cases where symptoms persist that require our attention.

The diagnosis frequently brought by the patient is rheumatism, sprain or neuritis, or possibly a history of trauma. Local tenderness is complained of directly under the deltoid. Sometimes swelling occurs, but in essential bursitis there is no atrophy of the deltoid, even if abduction is somewhat inhibited, providing there is no circumflex nerve injury accompanying those cases of bursitis following injury.

X-ray pictures may be negative, but not infrequently in the non-traumatic cases a calcareous, or gelatinous, gummy deposit shows in the x-ray, occupying the deep layers of the bursæ, and these deposits may take various forms and be of such size as to actually cause pain from pressure, either on the deltoid when contracting in front or pressing on its abductor partner, the supraspinatus tendon lying beneath.

The treatment of these cases with negative x-rays is largely that which comes under the head of physiotherapy, after the acute symptoms are over. In the meantime abduction for protection of the muscles, namely, the deltoid and supraspinatus, should be instituted. If, however, the x-rays show deposits, operative procedure is indicated, and the slide I am showing you today is of a case (Fig. 1) where the patient made a complete recovery following removal of the calcareous deposits.

One cannot discuss this subject without admitting that there are types of painful shoulder where



Fig. 1. Calcareous deposit directly below the acromial process, which gives the appearance of being an exostosis, but proved to be a deposit in the deep layer or posterior wall of the acromial bursa.

after the most careful study a diagnosis cannot be made. These usually occur in unstable, neurotic young women and follow a minor injury, present no definite signs of neuritis, or atrophy, but persistent subjective symptoms continue, irrespective of the treatment, until the physician, if not the patient, is worn out.

In conclusion let me emphasize the importance of attempted accurate diagnosis, particularly as regards the muscle balance involved, and protect stretched muscles as early as possible; also the great importance of treating these cases by physiotherapy and medical gymnastics, not only for the result to be obtained therefrom, but because in this day and age the cults, which are springing up about us, are accomplishing, through their efforts of treatment, things which we have neglected in the past through our efforts alone in diagnosis.

DISCUSSION

DR. EMIL S. GEIST, Minneapolis: Regarding the important subject which Dr. Wilcox has presented, one might spend much time in discussing it, but I shall not do so. There are a few points one might consider.

The first one he made was regarding injury to the shoulder with Colles's fracture. It is not an uncommon thing to find a stiff shoulder in an old woman who has fallen upon the ice and has sustained a typical Colles's fracture. It ought to be a routine with us who are treat-

ing Colles's fractures to examine the shoulders of the patients.

As to injury to the circumflex nerve, I have seen two or three cases of distinct paralysis from a fall on the shoulder where paralysis of the circumflex nerve followed, and it is not an uncommon thing at all.

Regarding the calcareous bursa that the doctor showed on the x-ray, I have operated on several of these cases. I had a case of much more marked "calcification" than the one shown. I was anxious to operate but the patient did not consent. Since then, that bursa disappeared, as verified by x-ray, and that has been my experience several times since with other cases.

Regarding the question of splinting an injured shoulder, I think our tendency ought to be, in nearly every case, to put on an abduction splint. I believe the sling is the enemy of the shoulder. We should use the abduction splint more freely and I believe our results in fractures, sprains and other injuries about the shoulder will be better.

DR. M. S. HENDERSON, Rochester: I cannot resist saying a few words on this subject as the condition is relatively common. Patients come to us with painful shoulders and we do not know exactly what to do for them. These patients may be arbitrarily divided in three groups. First, patients with a painful shoulder and no physical findings. They tell us they cannot sleep at night; they cannot lie on the shoulder. It is difficult to make a diagnosis; the x-ray is negative. You may take out the tonsils and extract the teeth, but often that type of shoulder goes on to the second group, namely, the stiff shoulder. The patients cannot lift the hand to the back of the head or put it into the hip pocket, or put it to the waist line posteriorly. In some of these cases of stiff shoulders we put the patients to sleep under ether and break up the adhesions. You can feel the adhesions break as the arm is manipulated. Ether is the best anesthetic as the patients may be returned to bed and the arm fastened to the top of the bed before they awaken from the anesthetic. Physiotherapy consisting of baking, massage and the encouragement of active motion is helpful in the convalescent stage. There is one other type, the third, in which, as Dr. Wilcox has shown, there is a real lesion to be seen; a calcareous deposit in the bursa. My experience has been similar to that of Dr. Giest in that these patients may go on and get well, and later the x-rays may show no evidence of calcareous deposit in the bursa. Certain patients, however, should be operated on.

DR. WALLACE COLE, St. Paul: Stiffness of the shoulder following wrist fractures is so common that I like to tell patients about it, and point out to them the importance of starting to move the arm up and down. I consider the pathology there probably what Dr. Thomas described, that is, when the arm is at the side the lower portion of the capsule of the joint is covered. If there is a traumatic arthritis, effusion takes place and the capsule cannot be stretched out. If we start early with abduction we prevent the gluing together of the capsule so that we can prevent it later.

THE PRESENT STATUS OF MEDICAL OPINION CONCERNING THE NATURE, DIAGNOSIS AND PROGNOSIS OF ENCEPHALITIS EPIDEMICA*

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The profusion of medical literature on this subject during the last few years is in itself somewhat confusing. This is no reflection on the literature but rather only another form of expression denoting the multiplicity of types, the great variation in virulence of attacks, remission, exacerbations and the numerous sequelæ with which this most protean of diseases exhibits itself to different observers.

The object of this presentation is rather in the nature of a "rundschau" of the medical literature on such questions as to whether this disease is a separate entity, whether it is infectious and contagious, the nature of the causative factor, also a general discussion of the nervous pathology, general symptomatology, diagnosis and prognosis.

Ferdinando Micheli discusses the discovery of Bastai as well as the experimental researches of Strauss and Löwe, Noguchi and Flexner. He speaks of the interesting experiments in which cats have been inoculated with the encephalitic virus and are affected with similar lesions and a similar symptomatology to that found in men. This author concludes that epidemic encephalitis is a separate entity, the causative factor of which most frequently gains entrance into the system through the region of the nasopharynx, that its virus is like the virus of poliomyelitis, filterable and perhaps under certain conditions visible, and culturable.

A case of probable transmission of the virus of encephalitis by a person who had been affected with the disease for three years is reported by A. Lumière. A discussion of this case was participated in by Netter, Martin, Canby and Sicard. The opinions were expressed that encephalitis is an infectious disease although the transference is difficult to demonstrate; also that the virus can persist for a long time in the nerve centers and at various times cause exacerbations.

P. Harvier and C. Levadite report a case of en-

cephalitis in which the nerve centers were virulent after a period of six months. This was demonstrated by the injection of the virus into guinea-pigs, which died three weeks after the injections with symptoms of the disease.

Thalheimer in a preliminary communication reports confirmation of the studies of Strauss and Löwe, that the virus of encephalitis is a filterable one, that it resembles somewhat the virus of poliomyelitis; but contrary to this is demonstrable in the spinal fluid and is also transmissible to guinea-pigs.

C. Levadite and P. Harvier state that the virus of encephalitis will live in milk in ordinary temperatures at least sixty days and in water five days. They, therefore, conclude that milk and water may play an important rôle in the spread of epidemics.

The report of a commission appointed by the Paris Academy of Medicine on the contagiousness of encephalitis is interesting. They conclude that the danger of contagion is not great, but nevertheless undeniably exists even in chronic cases which have lasted for years, also from healthy carriers having contact with encephalitic cases, as well as objects such as clothes, the washing, etc. The infection occurs through the nose and mouth.

Carl Kling and Liljenquist Folke after a careful study of a number of epidemics in Sweden conclude that a catarrhal condition of the upper air passages occurs in every case. In the mild cases presenting these catarrhal symptoms no evidence of organic disease of the brain is to be discovered. Since these mild cases are the most numerous and are usually not recognized as an expression of encephalitis, effective measures to stop the spread of epidemics of encephalitis are almost impossible to carry out.

H. Rogers and Andre Blanchard in an article on the contagiousness of encephalitis refer to the numerous observations on the subject, notably the occurrence of encephalitis in twelve out of twenty-one persons in an English boarding house within a week, with four deaths. The most dangerous carriers are the ambulant forms (*formes frustes*). It is impossible to isolate the chronic types of years duration which are also considered as carriers.

THE PATHOLOGY

The pathological reports of all observers seem quite uniform. The basal ganglia and the nuclei of the cranial nerves are the points of predilection.

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The meninges and the spinal cord are sometimes affected. The minute changes in nerve tissues consist of glia proliferation along with perivascular infiltrations of the basal brain ganglia of which the corpus striatum seems to be the one most frequently and seriously involved.

CHANGES IN THE SPINAL FLUIDS

In an article on the serology of the spinal fluid in encephalitis epidemica by Kraus and Pardee, the authors state that as a rule the spinal fluid shows considerable and important changes which they classify as follows: (1) a clear colorless fluid; (2) an increase in pressure; (3) an increase in the mononuclear cells; (4) an increase in the globulin; (5) an increase in the amount of spinal fluid sugar; (6) a negative Wassermann; (7) the presence of bodies producing a change in color of the colloidal gold solution.

In 120 of their cases the globulin content was increased in 72 per cent of cases. In twenty cases during the first week of the disease the maximum cell count was 160, the minimum 2, the average 63.3. The sugar content tested in twelve cases was 0.0062 to 0.095 per cent.

In five of our own cases during the acute stage the maximum cell count was 80/3, the minimum 3/3, the average 26.6. The Nonne was a plus 1 in four cases, negative in one. The pressure was increased in two cases. The gold solution was changed in three cases, the most marked changes occurring in the higher dilutions. There was no change in two cases. In a fatal case with many somatic symptoms of severe involvement of the basal brain ganglia with fever as high as 103 and marked neck rigidity, the only deviations of the spinal fluid from the normal was in the colloidal gold curve.

The spinal fluid examination in this disease as in all others has its greatest significance in diagnosis when contrasted with the clinical picture.

In a patient suddenly stricken with headache, neck rigidity, fever, delirium, semi-consciousness and a lethargic state, the diseases which come most into consideration in differential diagnosis are cerebro-spinal, tuberculous and syphilitic meningitis, polio-encephalitis and encephalitis epidemica. Under these conditions a 1 plus Nonne and a very moderate cell increase eliminates at once both the first mentioned affections. In differentiating between polio-encephalitis and encephalitis epidemica, in the majority of instances, the distinction

will have to be made from other symptoms, as the spinal fluid pathology may be quite similar in both.

Moderate changes in the spinal fluid with severe clinical symptoms in striking contrast to the degree of spinal fluid change would be strongly in favor of the diagnosis of encephalitis epidemica in a distinction between it and any one of the above mentioned diseases except polio-encephalitis.

In syphilitic meningitis cases where the Wassermann reaction is negative, a differentiation based on the spinal fluid content alone, in the writer's opinion, is often impossible. We are able to recall seeing two cases in both of which a typical lethargic state existed where the spinal fluid findings were essentially the same but a further observation revealed the one to be of syphilitic origin, the other encephalitis epidemica.

Differentiation of the spinal fluid pathology between this disease and brain tumor, cyst or abscess would, in many instances, also be impossible. How could anyone exclude brain tumor, cyst or even abscess in one of our fatal cases with an increased pressure, a plus 1 Nonne and a cell count of 3/3, all lymphocytes.

To summarize, there is nothing a spinal fluid examination reveals which can be said to be pathognomonic of encephalitis epidemica. The spinal fluid content has characteristics which, construed in connection with the history and symptomatology, may be very valuable.

The degree of increase in both the cell count and globulin content is usually much less than in other diseases, severely and acutely attacking the nervous system.

In the most severe cases the pressure may show very little or no increase. The globulin content may be expressed by a mild positive and from ten to twenty lymphocytes per c.mm. enumerates the cell increase ordinarily observed.

Concerning the colloidal gold reaction Davis and Kraus say that in forty-one per cent of their cases the reaction showed deviations from the normal.

The variations in the gold curve indicated no relationship between the severity, duration or the clinical picture exhibited by the disease.

SYMPTOMATOLOGY

In a report on 255 cases, H. F. Smith states that 14.92 per cent of the cases occurred in children un-

der five years, 27 per cent between the ages of five and twenty and 56 per cent of the cases were over twenty, while in 5,553 cases of poliomyelitis the corresponding percentages were 68.9 under five years, 28.3 between five and twenty, and 3.5 over twenty years of age. In 29 per cent the onset of the disease was sudden, in 71 per cent gradual. The more acute the onset, the worse the prognosis. The percentage occurrence of the most prominent symptoms were: headache 87, sensation of fatigue 84, fever (mild in character) 98.5, vertigo 77, visual disturbances 72, diplopia 83, strabismus 77, ptosis 95. In 85 per cent of the cases some degree of aphasia was observed, from the slightest degree to a complete loss of speech. The most common speech defects were those of dysarthria. Such symptoms as disturbances of the reflexes, pupils, paralysis of the cranial nerves, retention and incontinence of urine, tremor, chorea, rigidity, paralysis of the extremities, occurred frequently. In thirty-five cases the globulin content of the spinal fluid was a plus 1. In 159 cases 29 per cent were fatal.

Lionello de Lisi, in an article concerning the Parkinsonian type of encephalitis, says that it most resembles paralysis agitans, *sine agitatione*. The cardinal symptoms depend on changes in the globus pallidus, also on lesions in the association fibres between the cerebellum and the rubrothalamic and thalamic fillet tracts.

Max Kirschbaum describes four cases in which anomalies in personality were noticed. Defects in intelligence were absent. In three cases there developed an incorrigibility and an asocial type of conduct which was in sharp contrast to the former good behavior of these children. In one case there was the picture of a moral insanity, another exhibited a hypo-mania; concerning the prognosis in such cases he has nothing definite to say.

Pette in an article on the course and prognosis of encephalitis says that he has observed numerous cases in which there was a varying interval up to one and one-fourth years between the acute attack and the beginning of the Parkinsonian syndrome. Also cases which were so light, some ambulant, in which the disease was not recognized and the severity of the later developing nervous symptoms were out of all proportion to the initial attack. This author reports six cases which apparently made a complete recovery and were for a long time fully able to pursue their former occupation before the Parkinsonian manifestations appeared. It appears

possible that the virus of encephalitis maintains its virulence in the system over long periods of time. If this is true, prognosis in encephalitis ought to be very guarded, since everyone who has passed through an acute attack carries within his system a volcano which at any time may start to erupt and cause serious disturbances to its possessor.

Artur Sarbo had an opportunity of studying twenty-five cases, not only during the acute attack but over a year afterward. Of the twenty-five cases, four died, one of which was a pregnant woman; six recovered; in fifteen cases sequelæ of various kinds occurred. One of the most interesting cases was in a professor thirty-two years old who during the acute stage had a bilateral facial paralysis and a lethargic conditions of six weeks duration out of which a chronic state developed, the most striking symptom of which was an exceedingly rapid exhaustion of the musculature which manifested itself after every movement, even on sitting down. In this case the myasthenic electro-reaction was demonstrable for a long time afterward. The most prominent nervous sequelæ were amimia, rigid posture with tendency to an inclination forward of the head and upper part of the body, hypertonia of the head and neck musculature, retardation of voluntary movements, monotonous speech, as well as an absence of any disturbance of the reflexes. The psychic disturbances manifested themselves chiefly by the absence of any initiative, the patient sitting hours at a time speechless and motionless. The intelligence remained for the most part intact.

In ten of our cases which we had an opportunity of studying very carefully because they were hospital cases, four were of the Parkinsonian type, of which three were *sine agitatione*; one had a marked tremor. The most troublesome symptom in two of these cases was that of difficulty in chewing and swallowing; after they had been eating for a little while there seemed to be not only a muscular exhaustion of the muscles of mastication and deglutition but also a complete inability to co-ordinate these and they were unable to get the food either down their throat or out of the mouth. It simply stuck there with the patient being unable to propel it one way or the other. Another one of these patients could talk and walk quite well early in the morning but along towards nine or ten o'clock was unable to do either, which had caused her trouble to be diagnosed as an hysterical condition. These particular symptoms are interesting because they

suggest the myasthenic type of reaction mentioned by Sarbo in addition to the Parkinsonian syndrome. Two of these patients were men and two women; the ages of the men were 47 and 52 years, the women 21 and 35. In the man 52 years old, whom I have had an opportunity of observing for a period of four years, there have been apparently no relapses or progression of symptoms. After the first three months he has been continuously at his former work, clerical in character. In the girl twenty-one years old whom I have observed for three years no true progression has occurred. She varies greatly in her ability to walk and handle herself at times but this variation in capacity suggests rather muscular exhaustion. Rest restores her to her best level of muscular attainment, while over-exertion makes her quite helpless. An analogous situation is seen in heart cases where this change in muscular tone is designated as compensation and decompensation.

We wonder how many cases similar in some degree are manifesting this same tendency to muscular exhaustion never before experienced by the patient until after an attack of influenza which was in reality encephalitis and are being classified as neurasthenia and psychasthenia? We feel quite sure we have seen a few. The patient thirty-five years old whose attack was in December, 1919, and was thought at the time to be a nervous breakdown, has experienced undoubted remissions and genuine progressions which no other explanation could possibly explain.

In two of the cases in this series the onset was manifested first by a headache of several days duration followed by a sudden and complete hemiplegia, apoplectic in character. Both of these cases were women, aged 32 and 33 years. Both died. The first case was continuously progressive in character passing through the lethargic and temperature stages, death occurring during a condition resembling catatonia. At the time of her death she had both hallucinations of hearing and sight. She was taken sick July 10, 1920, and died December 3rd of the same year. The spinal fluid examinations of this patient were interesting. On August 14th, the date of her admission to the hospital, the macroscopic appearance of fluid was smoky, due to appearance of blood; the pressure was a plus 1, the Nonne plus 1, the cell count 2,900 per c.mm. of these, 2,000 were red blood cells, 900 white; of the white 95 per cent were of the p.m.n. variety,

5 per cent being lymphocytes. Neither stained specimens nor cultures showed any organisms. On September 18th with no improvement in the clinical picture, except the temperature, the spinal fluid was in macroscopic appearance clear, the pressure a plus 2, Nonne negative, cell count 6/3 (all lymphocytes). In both instances the colloidal gold curve showed changes in all dilutions: in the first fluid the great variation was manifested in the lower dilutions; in the second these were observed in the higher. The Wassermann was negative. The second case began in April of this year with headache, then double vision, and finally a hemiplegia with dysarthria. This patient in the beginning was an office patient seen first June 29, 1922. No positive diagnosis was made. The diseases in differential diagnosis which were most seriously considered in this case were cerebro-spinal lues, encephalitis epidemica and multiple sclerosis. She was placed on specific treatment and at first made decided improvement so that she was able to resume her household duties. On July 19th she came to the office complaining again of headache, with all old symptoms much worse and new ones appearing such as ptosis and double vision. She went to the hospital the next morning and rapidly sank into a typical lethargic state with temperature varying from 99 to 102. She died on August 2nd. This patient had her initial attack in April, ran a mild course with a distinct remission until July 19th, when while under specific treatment and for no apparent reason she got an acute exacerbation which progressed to a fatal termination two weeks later. On July 20th, the date of her admission to the hospital, her spinal fluid examination was: pressure normal, Nonne negative, cell count all lymphocytes 3/3, colloidal gold 112221000. The wide variation of the spinal fluid findings in these two cases, both in an acute febrile stage, is interesting.

Another patient of this series, male aged 21, represented the delirious type. This patient was referred to us as an acute psychosis. He had a typical occupational delirium, also a fine generalized tremor much like that seen in delirium tremens. His neck rigidity was so slight that we were not sure of it. Sometimes we thought it was present and sometimes not. The history of the onset in this patient was interesting. One day he quit work as cashier in a bank and went home because

of headache and nervousness. He imagined money was being passed around and spoke of an adding machine having some evil influence over him. There was no disturbance indicating any organic disease of the nervous system except the generalized tremor spoken of before and a slight hyper-tonicity of the entire body. The patient ran a temperature which varied between 99 and 104. His spinal fluid examination on entrance was pressure plus 1, Nonne plus 1, cell count 18/3, colloidal gold no change, Wassermann negative. This patient was admitted to the hospital February 19, 1920, and died rather suddenly on March 9th, when it was thought he was improving. The clinical picture presented resembled more that of an acute mania.

Another case, male, aged 21, whose onset was two years before, presented the nervous sequelæ of coarse choreiform movements involving both the face and upper extremity.

Of the other two cases, one was a boy of fifteen who, two years ago, according to the history, had a sickness which seemed peculiar at the time, in which for a period of six or seven weeks he wanted to sleep. One expression his mother made was especially descriptive of the lethargic condition. She said by shaking and exertion they could rouse him up so that sometimes he would come to the table and eat a good meal. When he had finished eating he would go back to bed and go to sleep again. During the first week of this sickness the case was said by one physician to be rheumatism, by another "flu." After the lethargic state passed off it was followed by a period of insomnia and restlessness. Before this illness the boy was a normal boy. At the age of twelve he was in the fifth grade. His general behavior was such that it caused no especial comment. After this he was completely changed. He has been two years in the fifth grade and his teachers report that he makes no progress whatever. Last spring his parents were told he would not be received in the school any more because his conduct was so bad the discipline of the whole room was destroyed and it seemed impossible for him to learn. The mother said at home he was noisy and loud, disobedient to her and rough and mean to his two brothers.

In the office his antics made examination difficult. He called the examiner "Doc," appropriated immediately the examiner's chair, picked up his fountain pen and proceeded to take it apart. The individual qualities of intellect as shown by his

alertness of response in answering questions and the correctness of his answers, rated his mental age between that of nine and ten. In other directions, such as ability to concentrate, any realization of the grotesqueness of his own behavior and a general sense of the proprieties, a baby of three would have put him to shame. An impossible personality would seem to be the designation which described his conduct the best. His features are coarse and his movements clumsy. Otherwise both the physical and neurological examinations were negative.

The last case of this series presents a number of points of interest which, in order to bring them out properly, will be presented as nearly as possible as the case developed itself to us.

Patient, male, age 40, married, occupation physician. He was seen first January 21, 1921. Family and personal history were negative. Up to date of the present illness this patient had been an unusually active and hard worker. The history of present illness obtained at that time was as follows:

Patient broke down nervously two years ago with symptoms of depression, insomnia, a lack of confidence in himself and a general feeling of fatigue and exhaustion. He attributed his condition to overwork and thought that a vacation was the thing that he needed and so he went with his family to Florida for a vacation of some six weeks. In relating an incident which occurred there, he speaks of both a fear and apathy to any effort, either mental or physical, but especially physical, which has been and still is such a formidable and prominent feature of his case. His vacation failed to bring him the expected relief from this feeling of fatigue. So after his return home he consulted a medical clinic in order to try and ascertain what his trouble was. In the course of his examination at this clinic a spinal fluid examination was made, and he was told that the Wassermann reaction was positive in his spinal fluid, as well as having also a positive Nonne and a considerable degree of increase in the cell count. Upon these findings a diagnosis was made of cerebro-spinal lues. He was given some nine or ten intravenous doses of salvarsan as well as a number of intraspinal doses of salvarsanized serum. Along with this treatment mercurial injections were also administered. After these treatments the Wassermann reaction in his spinal fluid was said to have become negative. An improvement occurred in the other findings as well. The improvement was wholly seriological, how-

ever, no improvement whatever taking place in his symptoms. He was then advised to seek sanitarium treatment for these symptoms and came to us. At this time both his physical and neurological examinations resulted in negative findings. His serum Wassermann was negative. His spinal fluid findings were: pressure normal, Nonne a plus 1, cell count 7/3, Wassermann negative in 1 c.c., colloidal gold 0011100000.

The picture he submitted to us during his entire stay was a typical one of a neurasthenic state. One symptom which stood out above all others was a dread of physical exertion. He had to be constantly urged to effort in this direction and under considerable pressure took sometimes walks of several miles, drove his own car and played various games such as quoits and croquet. He was of an athletic type and in a jumping contest among the male patients outclassed them all. Always, after these exercises, he complained bitterly of fatigue and when he returned to his room threw himself on the bed because of his utter exhaustion. At this time he was gaining in weight, his blood count and hemoglobin were normal and to us there were no manifest reasons to explain this extreme exhaustion, of which he complained continually. He was tested carefully for the myasthenic reaction with a negative result. On July 1, 1921, he returned home with the firm intention of overcoming his subjective symptoms and taking up his work. He tried to do this for several weeks but gradually dropped back to his former apathetic and listless state.

A short time ago his wife wrote us saying she wished we could see her husband again, that he had changed in so many ways since he was here last year. Remembering the history of a positive spinal fluid Wassermann which was given us, we felt he ought to return for another spinal fluid examination, since he had received no specific treatment since that mentioned before. On September 25, 1922, he returned. This time the spinal fluid findings were: pressure normal, Nonne questionable, cell count 5/3, Wassermann negative in 1 c.c. and colloidal gold practically the same as in the first instance. The serum Wassermann was also negative. The change in his appearance was so great that it gave us a distinct shock. The mask-like expression, the slowness in speech and movement, the general muscular hypertonicity, the position of the hands, the peculiar gait and a drooling,

could leave no doubt of the Parkinsonian syndrome. The old symptoms of general apathy were all present. The sensation of fatigue after effort seemed rather to have increased than diminished. The patient had gradually eliminated effort of any kind almost entirely. He had quit his interest in reading, in current events, and did practically nothing all day long. His intelligence seems to be about the only quality unimpaired. Of initiative he had none. When asked why he had surrendered himself so completely to this general inertia and did not at least do the things which he could do for his own peace and comfort of mind, such as reading, walking, visiting and playing games of cards and checkers, he was unable to give any adequate explanation. When asked if it was the fear of the feeling of fatigue following such efforts, he said he did not know, perhaps it was. A few notes from his daily hospital record while at the sanitarium a year ago will perhaps best describe his condition while there at that time. "Patient had a very good night, appetite good, complains of tired feeling. Spent most of afternoon outside. Walked thirty-two blocks. Still feeling tired in the evening. Patient had a good night but does not feel rested. Pitched horseshoes, walked thirty-four blocks." On the day following this, after a good night, patient complained of being fatigued all day. Spent most of the day in bed. Walked fifteen blocks. There were very few days in which a complaint of feeling tired or fatigued was not recorded. In addition to this there was always frequent complaint of headache, not more, however, than the ordinary neurasthenic is apt to complain of. The patient was not infrequently depressed and often broke down and cried. All these daily activities were only accomplished as a result of constant urging. If, at that time, he had been left to himself, to follow his own inclinations, as the subsequent history of his case shows after he had returned home, he would have succumbed to both a physical and mental lethargy. During all this time, a period of some four or five months, there was not a single somatic symptom that we were able to demonstrate. He was discharged on July, 1921, in what seemed to have been splendid physical condition, under the diagnosis of psychasthenia. When he returned in September, 1922, with the well developed Parkinsonian syndrome we felt there must be a history of initial onset and so began again with the beginning of his breakdown. The taking of his history again is especially interesting in seeing how

easy it is to miss the vital point in the beginning of an illness, even though one tries to be careful to acquire it. The first time we had asked him if he had had "flu" or influenza recently. On receiving a negative answer we had let the matter drop there. This time, the very distinct impression that there must have been a beginning to cause this syndrome, more definite and positive than just overwork, caused us to inquire more carefully into his life during the two weeks before he quit work.

In the first week of December, 1919, while working hard and taking care of "flu" cases, he experienced an irrepressible feeling of sleepiness during the day which he does not remember of ever having had before, no matter how hard he had been working. He would go to sleep in his office while talking to a patient, wake up, go on talking and then drop to sleep again. At night he was unable to sleep well. During this period of lethargy he recalls a daily headache. He attributed these symptoms to overwork and because of them went the next week for a visit to relatives to get a little rest. While on this visit he developed a left facial paralysis which entirely disappeared after a few weeks. A medical consultation did not furnish him at that time with any adequate explanation of his facial paralysis. Here, then, was a perfectly good history of the initial onset, although ambulant in type, of encephalitis epidemica. Later on, after his spinal fluid findings resulted as they did, these symptoms were attributed to his cerebro-spinal lues.

The very unusual features of this case to us are: (1) the mild and ambulant form of the initial attack; (2) the severe and progressive type of the nervous sequelæ entirely out of proportion to the mildness of the acute attack; (3) the lateness of appearance of the first symptoms of the Parkinsonian syndrome, a period of two years and a half; (4) our own inability to make a correct diagnosis, even though subjective symptoms were numerous but misled us entirely because of their wholly subjective and neurasthenic character until this syndrome had developed itself.

J. Ramsey Hunt, in an excellent article, stresses the frequency of the striatal and thalamic type of encephalitis. He distinguishes: (1) the palaeostriate or pallidary syndrome type of paralysis agitans; (2) the neo-striate syndrome (nucleus caudatus and putamen), the choreic type; (3) a mixed striate syndrome, clinically a combination of the Parkinson-

ian and choreic types. In the first group the type of predominance is paralysis agitans *sine agitatione*, also cataleptic types with tendency to progression of symptoms and inclination to relapses, and finally combinations with pyramidal symptoms. In the second group he recognizes an acute form accompanied with delirious and other psychotic symptoms, a form with choreic athetoid movements, also a rhythmic chorea which by slow rhythmic movements is manifested in one or more extremities.

Laignel-Lavastine described more particularly the psychic types in encephalitis. He distinguishes: (1) the lethargic; (2) the delirious; (3) the epileptic (either Jacksonian or general epileptic attacks); (4) the manic, usually short in duration; (5) the depressive, which especially seems to follow the lethargic phase; (6) the hebiphrenic-catatonic. It may be added that the same patient may exhibit any one of these so called types in the different stages of the disease.

In children tics and spasms play a rôle.

DIAGNOSTIC CRITERIA

In an article entitled "Diagnostic Criteria in Epidemic Encephalitis and Encephalo-Myelitis," Barker says "the occurrence in a patient of (a) pathologic drowsiness (lethargy), (b) cerebral nerve paralysis (especially ophthalmoplegia), (c) an acutely developing Parkinsonian syndrome, (d) a cataleptic or catatonic state, (e) myoclonia or chorea, (g) pupillary disturbances, (h) violent neuralgias, (i) a poliomyelitis syndrome, (j) a peculiar delirium, (k) a psychotic state or signs of meningeal irritation when encephalitis is epidemic should make one think of the possible existence of this disease." The organic types have in the past few years been so well described that their recognition ought not at present to be difficult. It is in those cases where somatic symptoms are lacking and the chief complaints are either entirely subjective in character or manifest themselves only as psychic and character anomalies apparent only to the environment of the patient, which present the most difficult problems in the diagnosis of this disease at present.

SUMMARY

A review of the literature on this subject, which our own experience corroborates, clearly indicates that the consensus of medical opinion at the present time considers this disease as a separate entity; also that it is infectious, that the most probable

causative factor is a filtrable virus, which can be transmitted by inoculation to certain animals, notably the cat, guinea-pig, rabbit, monkey, etc., and that it can be grown in a suitable culture medium.

The disease usually enters the system through the nose and throat and its spread from one person to another most probably takes place by contact with the naso-pharyngeal secretions of infected persons or healthy carriers in whose naso-pharyngeal secretions the virus is present. It is thought to be also contagious, is transmissible without active contact but the danger of this is slight as compared with its infectious properties.

The acute attack in many instances is only the beginning of a chronic progressive disease of the nervous system manifesting remissions and exacerbations. The acute attack may be so mild that it is of the ambulant form but the mildness of the onset is no guarantee against the later development of serious nervous sequelæ; for this reason caution in the prognosis is indicated.

These chronic nervous types are still capable of acting as carriers.

Of the nervous sequelæ the Parkinsonian type seems the most common; here intelligence defects are comparatively rare.

Psychotic sequelæ are not unusual and exhibit a wide variation in type from cases presenting the schizophrenic reactions so often occurring in dementia precox and manifesting marked intellectual and moral defects, to milder forms resembling more a neurasthenic or psychasthenic character.

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DISCUSSION

DR. C. EUGENE RIGGS, St. Paul: Dr. Ball has clarified much that is vague and confusing in the literature of encephalitis lethargica and his viewpoint of this disease is clear and well balanced. According to Dr. Bassoe, little new has been added to our knowledge of the etiology, pathologic histology, symptomatology and treatment of encephalitis lethargica. It was my privilege to make the first case report of this affection in this state. Later, before Ramsey and Hennepin County Medical Societies, I called attention to the chronic forms and the classification of this disease; as to the former, Netter believes that it (encephalitis lethargica) is "a direct and continued action of the tenacious virus"; in this way explaining the exacerbations sometimes after apparent recovery and the existence side by side of old and new lesions (Bassoe). Only a virus remaining latent for months or years can account for this symptomatology.

Classification by clinicians of clinical forms and standardized groups cannot be made. Bramwell says that "an adequate and satisfactory classification which corroborates the clinical phenomena with the anatomical distribution is not possible." One can only keep in mind the outstanding symptoms with their subsidiary details. In chronic forms I have emphasized asthenia as a prominent symptom. Dr. Ball, in his paper, has reported four cases which are graphic illustrations of the myasthenia-gravis syndrome. The Parkinson syndrome is of common occurrence; it usually assumes the rigid form. It may develop during the acute attack or several years later. Catola has never seen a recovery. Courtney states that he has once observed this to occur. One of my patients during sleep, just on the moment of awaking (he was unable to walk unaided or talk), would walk naturally and converse in a perfectly natural manner. After a few moments he would relapse into rigidity and silence.

The mental disturbances are varied and are so many expressions of toxemia. Delirium is often the most prominent symptom. There may be simply sluggish mental reflexes or the manifestation of dementia precox and the manic-depressive syndrome; the latter are the expression of a latent taint revealed by this grave affection in a psycho-

pathic patient. The serologic findings have no pathologic significance. Cell increase is moderate; globulin is commonly present. Increase in sugar content has diagnostic significance. Pressure may or may not be increased. While the goldsol reaction is generally that of lues it may vary from 0 to the paretic curve. As to the blood, there is frequently a mild leukocytosis. The average count, according to Krause and Pardee, of their cases, is 12,000. The consensus of medical opinion is that lethargic encephalitis is an acute infectious disease, a distinct entity, that it is caused by a filterable virus, transmissible to certain animals, demonstrable in the spinal fluid. This virus gains access to the organism through the naso-pharynx. It may remain latent for months or years. Exacerbations have been known to occur as late as a year and one-half after the acute attack.

DR. S. AMBERG, Rochester: It would be presumptuous for me to take sides in the controversy that is going on in regard to the etiology of encephalitis, but I do not think the question is definitely settled. I was much interested in the paper of Dr. Ball. We have seen some very interesting cases in Rochester. There were some cases of paralysis agitans, in one of which the tremor was pronounced and in the other not quite so pronounced. We have seen cases accompanied by intense insomnia, and one series of cases engaged our interest to a great extent. We have about eleven or twelve cases of what we call the respiratory syndrome, some of which have been reported by Dr. Parker, and they have been noted by other men. It is a very remarkable picture. All of these have been in the fifth to the sixteenth year. The children sit or stand and all at once throw the head back and in most instances stiffen out, and this attack is accompanied by a rather rapid, loud and unusual respiration. This is a very peculiar and striking picture. Most of these cases have been associated with a certain amount of mental deterioration.

It certainly is well, as Dr. Ball has pointed out, to be very guarded in the prognosis of epidemic encephalitis.

UTERINE FIBROMYOMAS COMPLICATING PREGNANCY*

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Approximately one in eight white women and one in three colored women who reach the menopause have uterine fibromyomas. According to Stacy, 31 per cent of women with these tumors are sterile, whereas sterility from other causes is found in only 10 per cent. Conversely, sterility seems to be a factor in the production of some of these tumors.

Uterine fibromyomas are not an uncommon complication of pregnancy. Spencer says that they

occur once in every 150 pregnancies, and cites Pinard as finding eighty-four in 13,915 pregnancies and Pozzi, eighty-three in 12,050 pregnancies. Comparatively few women with these tumors have symptoms, and not many women who become pregnant have symptoms as a result of the tumor.

A group of 101 patients in the Mayo Clinic who had fibromyomas complicating pregnancy have been studied. Seventy-five per cent had symptoms resulting from the tumor, although only about half of the patients were aware of its presence. A smaller number came because of other complaints, not the result of the tumor. Since all of these patients sought relief from illness or tumor, statistics based on their complaints may not be comparable with those coming from obstetrical clinics where a number of the uterine tumors complicating pregnancy may be discovered only in the course of a routine examination.

Seventy per cent of the 101 patients complained of pelvic pain, pelvic tenderness, or both, pain being the predominant symptom. This high percentage of pain as a symptom possibly does not obtain in the average number of pregnant women with these tumors. The majority gave a history of having missed one or more menstrual periods. Twenty-five per cent had too frequent or excessive menses, although only six gave bleeding as their chief complaint. At least 25 per cent had only recently known of the presence of the tumor. More than half (56 per cent) were thirty-five years of age and over; that is, in the decade of menstrual life when the ratio of pregnancies is diminishing and that of tumors increasing. Eighty per cent were thirty years and over. Nearly half of the group were primiparas.

The diagnosis of uterine fibromyoma coexisting with pregnancy is often extremely difficult and sometimes impossible. Spencer says that it is easier to overlook the pregnancy than the tumor, particularly in the first half of pregnancy when the usual signs of discoloration and softening of the vaginal mucosa and cervix, softening of the body of the uterus, uterine contraction and ballottement may be absent, or if present may, with the exception of uterine contraction, result from a tumor and not from pregnancy. During the second half of pregnancy, continued cessation of the menses in the presence of a rapidly enlarging tumor is of the utmost importance. During this time, fetal movements may be felt, and the fetal heart may be heard.

*Read before the Southern Minnesota Medical Society, Mankato, Minnesota, December 4, 5, 1922.

A softened fibroid undergoing degeneration may simulate the uterine softening of pregnancy and fibrous nodules may be mistaken for fetal parts. Moreover, this condition must be differentiated from abnormal pregnancies such as tubal, cornual and twin pregnancies, and from pregnancy in the presence of ovarian tumors, or other tumors of the pelvis and lower abdomen.

Careful history-taking is of great value and will usually indicate that there have been one or more missed periods, and furthermore that the enlargement of the tumor has been rapid and comparatively recent. Even in the absence of other signs of pregnancy, rapid growth of a uterine myoma should always place the physician on guard. When there is doubt as to the diagnosis, a waiting policy should be adopted unless the patient's symptoms demand interference, which will not be often. A lapse of several months may demonstrate the presence or absence of definite signs of pregnancy.

One must be prepared to meet the psychical effect that delay causes: the patient may be annoyed at the delay and uncertainty in the diagnosis and, not infrequently, may be so insistent that she is not pregnant that a waiting policy is difficult to follow.

Occasionally the history may be so obscure, the physical findings so indeterminate and the patient's complaint so serious, that an exploratory laparotomy may be necessary to clear up the diagnosis.

The complications which may arise can be divided into two groups, the effects of pregnancy on uterine fibromyomas, and the effects of uterine fibromyomas on pregnancy. An intrauterine pregnancy is the occasion for changes in uterine fibromyomas even though no unusual symptoms arise. Almost invariably there is increase in size and softening of the tumor. Opitz reports two cases of a lessening of the size of the tumor, but this is extremely unusual. The tumor may become impacted in the pelvis because of its size or because of adhesions preventing the enlarging uterus from rising out of the pelvis. Torsion of a pedunculated tumor is an occasional complication and infection of the tumor may occur, more particularly in the puerperium.

A condition which deserves special mention is the so-called red degeneration, characterized by an aseptic necrosis with hemorrhages into the tumor,

giving it a red appearance on section, which is prone to occur in these tumors during pregnancy. Schiller, who has described the condition admirably, says that its cause is not definitely known. Several of the theories are that it is produced by infection, by the toxins of pregnancy, by thrombosis of the blood vessels, or by endarteritis. It is known that the interstitial tumors are more apt to show this change than are the submucous or subserous tumors, and that one or more nodules may show it while others in the same uterus do not. This is explained on a basis of the lessening of the blood supply to the tumor due to the contraction of the uterine muscles which causes rotation of the tumor. This rotation frees the tumor from the surrounding uterine muscle, and leaves it in a space in which the blood supply may be relatively poor or inadequate. Most of the myomectomies are performed on account of symptoms arising from this condition. These may vary from a mild malaise, with tenderness and discomfort, to severe attacks of pain and shock, and sometimes peritonitis.

The effects of these tumors on pregnancy are shown mainly by an increase in the tendency toward certain complications such as placenta previa, hemorrhages occurring from implantation of the placenta over a submucous tumor or from the submucous tumor itself, abortion, premature labor, dystocia due to abnormal presentation, to uterine inertia or to the location of the tumor in the lower uterine segment and postpartum hemorrhage due to retention of the placenta or from a submucous tumor.

In advising treatment, there are three main considerations: the present welfare and future health of the mother, and the welfare of the child. There are two general lines of treatment: non-operative or expectant, and operative. Many women with uterine fibromyomas who become pregnant will pass through pregnancy and confinement without symptoms due to the tumor. The treatment will be expectant, depending on the location, size and condition of the tumor, and the symptoms which may arise. Expectant treatment carries with it certain risks: abortion, red degeneration of the tumor, hemorrhage, incarceration of the uterus and tumor in the pelvis, malposition and malformation of the fetus and dystocia. Sloughing of a fibromyoma during the puerperium, causing peritonitis, has been reported by Kosmak and others. Tumors in position to obstruct at the time of labor, those so

TABLE 1. METHODS OF TREATMENT AND RESULTS

	Mis-carriages			Therapeutic abor-tion elsewhere	Premature labor	Labor at term	Living child	Death of mother	Not heard from
	Number	Number	Per cent						
Expectant treatment	66	16	24	..	9	41	35	..	..
Abdominal exploration	3	1	33	..	1	1	1	..	..
*Myomectomy	15	5	28	1	..	6	4	..	2
Porro-cesarean	7	..	..	..	..	..	4	1	..
Cesarean section....	4	..	..	..	..	..	2	..	..

large that their presence gives marked pain and discomfort, and those which are causing pain and tenderness, or hemorrhage, may necessitate surgical intervention. Myomectomy and cesarean section, with or without hysterectomy, are the two most universally accepted types of operation, the choice depending on the period of gestation and the nature of the complication which has arisen as a result of the tumor.

Myomectomy has been recommended as a conservative operation in cases in which the fetus has not reached the period of viability and in which surgical relief is urgent because of symptoms, or on account of the tumor obstructing the passage. W. J. Mayo has reported successful myomectomies which have averted threatened abortion in several instances. Polak, Robertson, Kosmak, and others, also advocate this operation. On the other hand, Spencer and MacFarlane consider that it is rarely necessary and is not infrequently followed by miscarriage. Bottsford estimates that abortion or premature labor follows myomectomy in 17 to 20 per cent of cases, the incidence of interruption of pregnancy being higher if the gestation is more than six months. According to Williams, this is not a higher incidence than ordinarily obtains in pregnancies.

Hysterectomy before reasonable viability is contraindicated except in cases of acute degeneration or incarceration of the tumor, or severe uterine hemorrhage, if myomectomy cannot be performed. Hysterectomies for uterine fibromyomas have been performed, and when the uterus was opened, an early unsuspected pregnancy was found. Spencer makes the statement that he has never found it

necessary to perform a hysterectomy, and Tuffier prefers the classical cesarean with myomectomy at term.

Cesarean section, with or without hysterectomy, is without question the operation of choice in those patients who can go to term with reasonable safety, and who cannot be delivered by the vaginal route. Heinach asserts that therapeutic abortion, as a means of relief, is illogical as it is not curative. Polak says that it is a difficult problem and there is no more dangerous procedure.

Sixty-six of the 101 patients in the series were treated expectantly. Ten had cesarean sections at or near term. Twenty-four patients, on three of whom an abdominal-pelvic exploration was made, had operations prior to the period of viability. One of these patients, on whom a myomectomy was performed, had a vaginal cesarean elsewhere at term.

Of the group of sixty-nine patients, including those treated expectantly and those having explorations, seventeen had miscarriages, ten had premature labor, and forty-two had labor at term with thirty-six living children. This shows a slight increase above the normal incidence of miscarriages and a decrease in the number of living children. Following delivery, seventeen of these patients had operations for the removal of the tumor. Twenty-five of the remaining fifty-two reported that they were well, but some had symptoms attributed to the tumors, and twelve among those reexamined were advised that removal of the tumor was not necessary. Four have died, one following hysterectomy for the tumor and three from other conditions. One patient returned five years after confinement with an inoperable carcinoma of the cervix.

There were fifteen myomectomies in the group; in this number were five miscarriages in the hospital following operation, one therapeutic abortion per-

TABLE 2. POSTPARTUM RESULTS IN SIXTY-NINE PATIENTS NOT OPERATED ON BEFORE CONFINEMENT

Patients	Number	Living				Dead	
		Well	Fair	Poor	State of health not known	Ill-	Opera-tion
Operated on....	17	4	1	..	9	2	1
Not operated on, operation not necessary	12	8	1	..	3	..	..
Exact condition of tumor not known	40	17	10	6	6	1	..

*During this period, January, 1910, to January, 1923, there were 4,684 hysterectomies for benign uterine tumors and 741 myomectomies on non-pregnant uteri.

formed after the patient left the Clinic, one vaginal cesarean and six normal labors. Two of these patients were not heard from. There were no deaths in the group. Of the three patients on whom explorations were performed, one had a miscarriage, one gave birth prematurely and one a full-term birth.

There were seven hysterectomies with one death. These cases are divided into three groups. The three patients in the first group had symptoms of fetal death or incomplete abortion; they were forty years of age. Two had marked metrorrhagia and the third, general malaise and a weighty sensation in the pelvis. At operation, besides the tumor, a macerated fetus was found; the shortest gestation was six weeks and the longest, about sixteen weeks. In the second group, pregnancy was suspected from the appearance of the uterus after the abdomen was opened, but hysterectomy was necessary on account of large multiple tumors with evidence of degeneration and necrosis involving almost the entire uterus. The two patients were each forty-three years of age. One had been married twenty-three years, and had had no pregnancies except two induced miscarriages early in married life; the other had been married twenty years, without known pregnancy. Gestation had proceeded four months in the first patient and between two and three months in the second. In the third group were two patients in whom pregnancy was not recognized until myomas were removed from the uterus. These patients were thirty-five and thirty-six years of age respectively. The first patient said that she had had a normal menstrual period three weeks before the operation, and the second patient gave a history of a missed period two months before operation with a slight daily show for three weeks before. Each had multiple uterine fibromyomas, one containing a four weeks' and the other an eight weeks' fetus.

Of the eleven cesarean operations, eight were performed in the Clinic, seven of them being Porro-cesareans. Three cesarean sections were performed elsewhere, two on patients who were treated expectantly up to the full period of gestation and the third, a vaginal cesarean, on a patient on whom a myomectomy had been performed in the Clinic at the third month of gestation.

CONCLUSIONS

Most patients with fibromyoma of the uterus pass through the period of pregnancy and confinement

without alarming symptoms and may be treated expectantly.

A careful history of the menstrual flow, making a special note of the exact date and description of the last menstrual period, is of the utmost diagnostic importance in the examination of patients with fibromyoma of the uterus, especially when the tumor is rapidly enlarging.

When there is the least doubt concerning the possibility of pregnancy, several weeks or months, if necessary, should be allowed to elapse before a diagnosis is made, unless the symptoms of the patient are such that delay is dangerous.

Operations for fibromyomas of the uterus, associated with pregnancy, are sometimes necessary before the period of viability. These may be abdominal exploration or myomectomy. Exploration of this type of tumor might be made more freely; myomectomy is definitely indicated at times and the incidence of miscarriages following myomectomy are not unduly high, but hysterectomy before the period of viability is rarely indicated and should be resorted to only when the patient has developed alarming symptoms. It has not been necessary to advise hysterectomy prior to the period of viability in any case in which a diagnosis of fibromyoma complicating pregnancy with a living fetus was established.

The operation of election in those cases in which operation is indicated is that of Porro-cesarean or cesarean section at term.

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DISCUSSION

DR. W. H. CONDIT, Minneapolis, Minnesota: Dr. Mussey is to be complimented on his excellent presentation of this subject and so fortunate to have such a wealth of material to study. Figures never lie, so we must concede that in this state seven thousand pregnancies were complicated by myomata during the past year. In the year 1921 there were 55,000 births in this state and undoubtedly in 1922 there will be at least 56,000.

This is a very timely paper and so well presented, with such a large number of cases to draw conclusions from, that I feel I can add very little from our small group. I wish to emphasize two or three points; one is that this is one of the complications of pregnancy that is staring us in the face in our attempts to decrease the mortality of childbirth. You know that we have not succeeded in lowering the mortality of childbirth in this state or in the United States in the past twenty years; we are fourteenth in the group of nations in the statistical reports of fatalities from complications of pregnancy. I hope in some of our meetings soon we will have a symposium on obstetrics. It is a vital question with us today. Now how are we going to do this, and how are we going to know how many of these myomata contributed to fatal issue in pregnancy? It is surprising to know how many myomata you will find of different size, some probably absolutely symptomless and which never will produce symptoms, immediately after delivery with the patient under anesthesia and absolutely relaxed when one can feel every part of that uterus. We know in one out of every eight white women we will find a myoma of greater or less extent. How much these contribute to postpartum hemorrhage, we do not know. The placenta may be implanted over a submucous one, or an intramural one and after delivery it may contribute to a postpartum hemorrhage. We have had difficulty only occasionally in diagnosing a pregnancy, differentiating between that and the rapidly growing soft myoma. We have a patient in the hospital now who has been under our observation for four years for sterility and she had a large myoma that made the uterus the size of a four months' pregnancy. Last

August she was told she was pregnant and was threatening miscarriage. She had had repeated bleeding, metrorrhagia rather than menorrhagia. She had had fairly normal regular periods but would have intermenstrual hemorrhages. She finally became rather anemic and it became imperative to remove the tumor. We had hoped to do a myomectomy but felt that it was impossible to save enough of the uterus to permit a pregnancy and that it would be dangerous for her to become pregnant afterwards. The error was made at the time of the hemorrhage in August because of a typical history of pregnancy. She had missed one period, with a scanty one before that, but it was evident from the condition of the uterus that this was impossible. There was not enough endometrium nor enough room in the uterus to have a conception. Another point is, we have had three in the last year on which we performed myomectomy—one at five months, one at six and another at about four and one-half—all have gone to full term with uncomplicated delivery. At the same time we were on the alert. We instruct them to give us plenty of time and as soon as labor begins to go into the hospital, fearing that we might have to do a cesarean because of the possibility of rupture of the uterus. I think the chances for rupture of a myomectomy scar are probably greater than from a previous cesarean section scar.

The other points of importance I think the doctor has brought out very clearly but there is no question but what these myomata go unrecognized in many cases where they could be operated during pregnancy, and especially the pedunculated ones that cause incarceration and failure of the uterus to rise, in that way contributing to miscarriage. They are very easily removed. It is remarkable even how large a one you can remove and get a good scar and the patient go on to uncomplicated full term delivery.

FOREIGN BODIES OF UNUSUAL INTEREST REMOVED FROM THE AIR PASSAGES

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Case 1 (A408580). Mr. C. O. N., aged forty-two years, came to the Clinic October 23, 1922, complaining of coughing and expectoration of ten years' duration. He said that his trouble had begun with an ordinary "cold", contracted as a result of change in climate. He had coughed constantly, and had raised an abundance of foul, purulent sputum, particularly during the winter months. One year before, he became definitely worse. He was confined to his bed for two weeks, during which time his temperature reached 102. He is now of the opinion that he had pneumonia. Following this attack the patient raised as much as one quart of sputum in twenty-four hours. The sputum was frequently tinged with blood. August, 1922, an ounce of

bright red blood was raised. Several examinations of the sputum did not reveal tuberculosis bacilli. The patient was quite well nourished. Dyspnea was markedly present on exertion. Physical examination of the chest showed evidences of extensive disease in the lower lobe of the right lung. Examination of the blood revealed a hemoglobin of 80 per cent; the erythrocytes numbered 4,710,000, and the leukocytes 14,000. A roentgenographic examination of the chest revealed a foreign body in the right bronchus at the level of the ninth rib posteriorly (Figs. 1 and 2).

The patient was again questioned with regard to the onset of his illness, and it developed that just previous to the onset of symptoms, while he was having some dental work done, a crown that was being fitted disappeared rather mysteriously. The dentist had insisted that the patient had swallowed it, but the patient had felt certain that this was not the case. He had had no cough or discomfort at the time of the accident. The following day a "gurgling" noise occurred in his throat on respiration, and several days later he contracted the so-called "cold."

October 28, the patient was bronchoscoped under local anesthesia, and a large dental crown removed

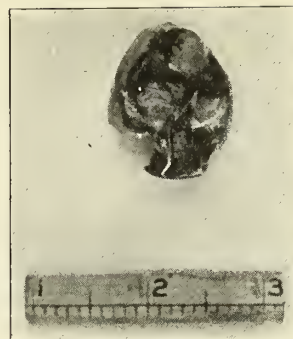


Fig. 3. Dental crown.

from the right descending bronchus (Fig. 3). The patient was dismissed and allowed to return home October 30.

Case 2 (A381798). Mrs. C. W. S., aged forty-two years, came to the Clinic January 15, 1922, with a fragment of a dental plate lodged in her bronchus. She had aspirated the fragment while laughing three days before. The plate had been broken for several weeks, but since the nearest dentist was fifty miles distant and the patient was able to chew her food with the pieces of plate fitted together, it had not been repaired. The foreign body caused frequent paroxysms of coughing. Roentgen-

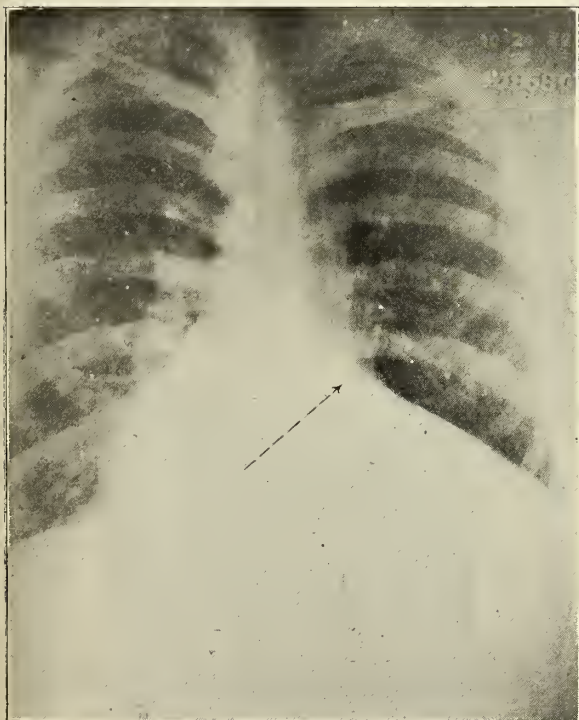


Fig. 1 (A408580). Anteroposterior view of foreign body in the right bronchus.

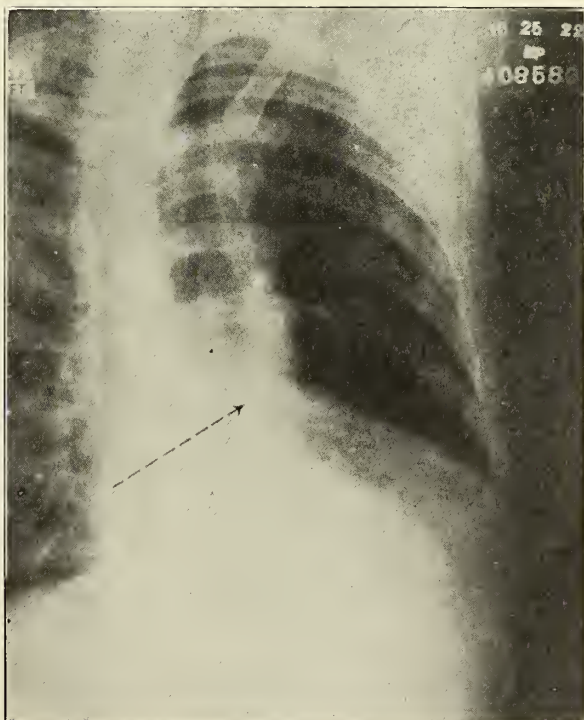


Fig. 2 (A408580). Oblique view of foreign body in the right bronchus.

ographic examination made at her home, the day after the accident, revealed the fragment in the right bronchus (Fig. 4), and she was immediately sent to the Clinic for treatment. She was greatly exhausted when she arrived, from the continuous coughing and dyspnea.

The patient was sent to the operating room and bronchoscoped under light ether anesthesia. The lower third of the trachea was greatly inflamed and edematous. The dental plate (Fig. 5), which was wedged firmly in the right main bronchus, was removed without trouble. Three days later the patient was dismissed from observation with only a slight bronchitis.

Case 3 (A63882). Mr. S. S. B., aged sixty-nine years, came to the Clinic April 6, 1922, complaining

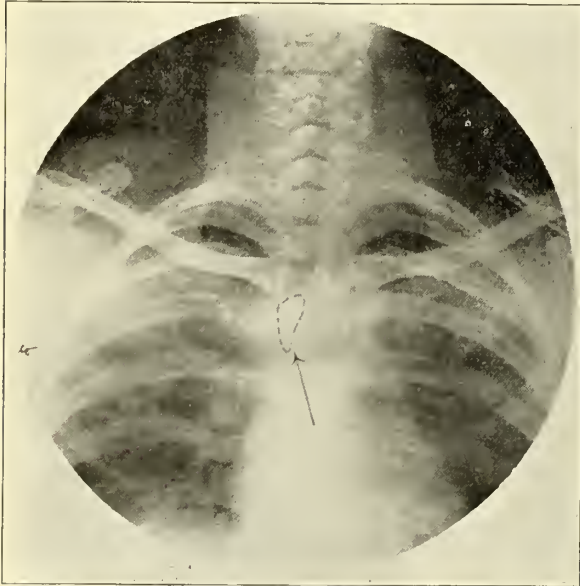


Fig. 4. Dental plate in the trachea.

of chills, fever, and cough. His trouble had begun December 1, 1921, when he had had a choking spell while taking chicken soup. At that time he had coughed up a small piece of bone. Following this he had had chills and fever at intervals of from five or six days to two weeks, and had had a constant harsh cough accompanied by moderate mucoid expectoration. The fever would continue from two to three days. During the febrile attacks the cough and amount of sputum increased.

Physical examination of the chest showed marked emphysema with râles throughout both lungs.



Fig. 5. Portion of dental plate.

Roentgenographic examination of the chest showed nothing abnormal. April 24, 1922, the patient was bronchoscoped under ether anesthesia, and nothing of particular significance was noted except a small pale mass about 3 mm. in diameter, on the anterior wall of the right descending bronchus. This small tumor was removed and found to be a granuloma containing several tiny pieces of bone (Fig. 6).

Since the operation the patient has continued to have a slight cough. No chills, and practically no fever have been noted. His weight has increased twelve pounds, and he is quite well in every way.

CONCLUSIONS

Case 1 is of interest in that it shows how a foreign body may pass into the air passages without producing evidence of strangulation and may remain there, unrecognized, for many years.

Case 2 illustrates the fact that a large foreign body may enter the trachea.

Case 3 demonstrates how a very small foreign body in the air passages may give rise to marked general symptoms.

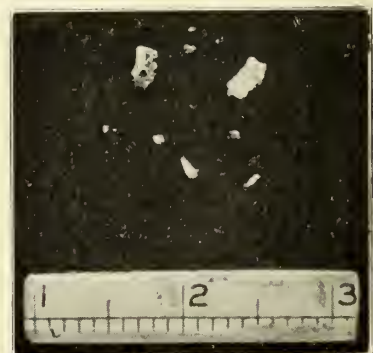


Fig. 6. Pieces of chicken bone.

HELIO THERAPY IN INFECTIOUS DISEASES OF THE BONES AND JOINTS*

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Rollier, of Leysin, Switzerland, began in 1903 to use the sun as a therapeutic agent. This, of course, was not the first time heliotherapy had been used, as the subject of "sun treatment" and "sun cure" has appeared and reappeared in medical literature during all times of history.

To Rollier belongs the credit, however, of having assembled scientific data existing up to that date and having applied them on a large scale clinically. Ten years later, he published at the International Physio-therapeutic Congress the results of heliotherapy in a large number of cases of bone and joint tuberculosis showing results that up to that time might have been called miraculous.

Ever since the publication of the above paper in 1913, I have used heliotherapy as an adjunct in the treatment of bone and joint tuberculosis. I have also used it in the treatment of a number of other chronic bone and joint infections.

Rollier's work was done in the mountains of Switzerland where the curative sun rays are unobstructed by the denser atmospheres of lower sea levels. In addition, he was able to expose his patients practically all the year round. While it is no doubt true that we who live in Minnesota have not the same ideal conditions to cope with, it is, nevertheless, a fact that we should acquaint ourselves more fully with the sun's curative properties. Many patients, who today are lying under roofs, who are covered with blankets and whose discharging wounds are covered with dressings, would be much better off if roof, blankets and dressings were removed. I venture to predict that in the next decade we will see the elevators in most of our hospitals extended upward another story, so that patients can be brought directly to the roof, where arrangements will have been made to receive and care for them according to modern heliotherapeutics during those months when our Minnesota climate permits it.

While Rollier's work was done chiefly in an institution and while it is true that institutional care is the ideal treatment, it is again, nevertheless, a fact that heliotherapy can be made use of by the patient

at his home. Institutions will never take care of more than a small fraction of the cases which can be benefited by sunlight. All of us must needs acquaint ourselves with this therapeutic agent of proven value so that we may be able to instruct the patient and his surroundings in the home treatment by sunlight.

Exposure of the entire body surface to the rays of the sun is always desirable and gives the best results; nevertheless for practical reasons, this often is impossible. The local exposure of an arm, or leg, or other affected portion of the body is also of great value to the patient and is not to be decried as valueless or useless.

Since 1913, I have sent many of my patients to the northern part of the state during the summer months, with instructions to "live in a bathing suit." The patient who is undergoing the sun treatment is, of course, also getting the additional advantages of rest and fresh air. There is no doubt that it is the rays of the sun which are the greatest factor in achieving curative results. In my work, I have followed as much as possible the directions of Rollier as published in his 1913 paper.

For several years, I worked during the winter months with the mercury vapor quartz lamp (this was some five or six years ago). At that time, I was unable to note much change in the sense of improvement in a number of my cases, and my interest in the mercury vapor quartz lamp abated. It may very well be that my technic in using it was faulty. During the past few years, favorable reports are again being published regarding the use of the above mentioned lamp, and I shall again take up its use.

In this climate, it would, of course, be of great value to have some substitute for sunlight. Whether this substitute is to be found in the roentgen ray, or radium, or whether it will be the above mentioned mercury quartz lamp, remains to be seen. It is probable that an absolutely satisfactory substitute for the sun ray will never be devised. To judge from recent literature, the mercury vapor quartz lamp offers the best substitute to date.

To those of us who are interested in heliotherapy the work done at the Glen Lake Sanatorium (which is for Hennepin county tuberculosis patients) is both stimulating and instructive. I call your attention specifically to this institution as it is close at hand, as the work being done there is of the most modern type, and as the reception you will get there will be

*Presented before the annual meeting of the Minnesota State Medical Association, Minneapolis, October, 1922.

the most cordial. I advise you to go and see.

One must be somewhat careful in the application of sunlight and not rush matters too much in the beginning. The point is to achieve a *tan* and not a *burn*. Blondes do not tan as readily as brunettes and in blondes one must be more careful in the gradual application of sunlight. I have been in the habit of slowly exposing the entire body, beginning with the upper and lower extremities, first with short exposures and gradually lengthening the time of exposure, on every succeeding day, exposing increased amount of skin area, so that after two or three weeks, the entire body is finally irradiated. One must be careful to protect the patient's eyes and head from the rays of the sun. No exposure should take place soon after meals.

It will be found that the older the patient, the easier he or she will become tired. One should be careful to guard against exhaustion and increase of temperature. The fact that the patient had a temperature before beginning heliotherapy is no reason for not using this method. However, a distinct rise of temperature following irradiation is usually a sign that exposure has been too long. Draughts should be avoided and the patient should be kept out of the wind. In my work, I have followed these rules both for general exposure, as well as in local exposure.

Most of my patients take their sun treatments at home and I must say that, given a patient of fair intelligence, this method offers remarkable possibilities. The degree of attention which the patient has paid to his treatment is registered by the amount of tanning present, and, as a rule, the degree of improvement in tuberculous and non-tuberculous infections can also almost be measured by the same degree of tanning.

In the winter months and on days when the sun does not shine, a quartz lamp promises to be a fairly satisfactory substitute. It is to be recommended. The types of cases here reported have been treated by sunlight exclusively. While glass windows destroy the larger number of curative rays, and while it is the desire and aim to expose the patient to the direct, unobstructed rays of the sun, I believe improvement will be noted even in those cases where it is impossible to put the patient out of doors and where the rays of the sun pass through the window.

TUBERCULOSIS

Tuberculosis of the bones and joints, of course, presents the largest field for the use of this thera-

peutic agent. It may be said that the treatment of bone and joint tuberculosis has been revolutionized by Rollier and his followers. Orthopedic appliances from now on must be more or less removable, so that the rays of the sun can reach the patient's skin, especially over the affected regions. More extension and rest must be used than heretofore.

In children, the method can be easily used when an intelligent mother is in attendance. In adults, the element of time often enters, and it is probable that operations, such as resection of joints, will always retain their practicability.

The application of sunlight to these tuberculous patients immediately increases the appetite and a gain in weight is noted. Within a few weeks, freedom from pain and a general condition of well-being and cheerfulness has established itself. The patient becomes accustomed to his new environment and sleeps and feels well. *Fistulæ* usually close, sometimes with surprising rapidity. Deformities often disappear; especially in the young. I have been able to watch, for instance, the disappearance of quite marked kyphosis in Pott's disease. Simple orthopedic measures are, of course, necessary—in addition to the sunlight—such as extension of a flexed hip in hip-disease, or extension in a flexed knee. The foot-drop in ankle tuberculosis must always be guarded against.

While it was my opinion up to a fairly recent time that a stiff, ankylosed joint, in good position, was the best result that a patient could obtain in tuberculosis, I have been led to believe that by means of heliotherapy, tuberculous joints may frequently "heal out" with painless motion. It is, of course, difficult to tell when complete healing has taken place. We may speak of cure in a tuberculous joint when the joint is painless and is strong enough to perform its function in a satisfactory manner, no matter whether it be ankylotic or movable.

OSTEOMYELITIS

I have been in the habit for the past six or eight years of exposing my postoperative, osteomyelitic cases to the sunlight, and it is surprising with what rapidity long incisions, designed to lay bare long stretches of bone, will granulate and heal. It is, of course, necessary to treat these cases, first, according to surgical methods. Occasionally the application of sunlight *per se* will result in the extrusion of a large sequestrum.

Case Report. A boy aged seven with chronic osteomyelitis of tibia, dating one year. A large sequestrum was pres-

ent. It was necessary to open the tibia widely in order to remove what was previously practically the entire shaft of the tibia. Enough involucrum had formed so that a new tibia had established itself. The incision reached from the knee to the ankle. There was considerable pus. There was no attempt at suturing. This boy was instructed to expose his leg all day to the rays of the sun beginning, of course, in a gradual manner. Two months later, the wound (which was at least 12 inches long and 2 inches wide) had absolutely healed.

I believe that in all forms of chronic suppuration, healing can be hastened in most cases by a matter of weeks and even months, if sun rays were applied.

CHRONIC ARTHRITIS

It is here that I found heliotherapy of great value in a number of cases. This is at best a distressing condition to deal with. The patients who nowadays arrive at my office suffering with chronic arthritis, come sans teeth, sans tonsils, and often minus a few other organs. (It is, of course, necessary in these cases to remove all possible foci of infection when present.) Each case must, of course, be studied for itself. A number of these cases are due to focal infection; another group are probably due to some gastro-intestinal disturbance, while I believe a third group has a neurological basis. The application of sunlight in my work has, in these cases, been more or less empirical.

Patients suffering from chronic arthritis are willing to grasp at a straw. Sunlight is cheap and not harmful. It is usually easily available and can be easily applied. I believe we should use it in chronic arthritis. For the sake of brevity, I wish to report only two cases:

Case 1. A woman 56 years of age who had suffered from typical, chronic arthritis for about 10 years. The wrist and fingers were swollen and partly ankylotic. Her elbows were partly ankylotic and the knees swollen and partly ankylotic. The ankles were swollen and stiff and there were deformities of toes. The patient had been in bed for the past two years. The tonsils and teeth had, of course, been removed a long time ago. After four months of energetic heliotherapy, during which time the patient's skin was thoroughly tanned, this woman was again able to get up and about so that she could walk around the house and even get up and down stairs. Her joints remained swollen but pain and tenderness to a great degree left. Up to now (three years later), the patient has materially improved; she is up and about and does her own housework.

Case 2. A woman 50 years old. The diagnosis was monarticular chronic arthritis of the right knee. X-rays reveal no focal infection of teeth. The tonsils seemed normal, although they were removed. Her symptoms were pain, swelling and partial stiffness of the right knee with occasional effusion on over-use. The x-ray was negative.

Here, we were dealing with a low-grade, non-tuberculous infectious process in the knee; type of infection being unascertainable. Three months' local heliotherapy (exposing the affected leg only to the rays of the sun), with only moderate rest to the knee, achieved a complete return to normal.

GONORRHEAL ARTHRITIS

After the acute stage of gonorrheal arthritis, I believe that the application of heliotherapy is followed by good results. I have used it in several cases, and I believe that the return to normal was at least hastened by its application.

Case Report. A young woman, aged 25, who had a typical gonorrheal-arthritis wrist which was non-suppurative. It was not necessary to open the wrist joint and it was protected by means of a cock-up splint and heliotherapy was instituted. As the hand and arm became tanned, it was surprising with what rapidity the joint effusion abated, and within about eight weeks the wrist could be considered normal, although somewhat tender for about two months longer, during which time heliotherapy was continued without use of the splint.

RICKETS

In addition to the usual anti-rachitic treatment, we have, in heliotherapy, a valuable adjunct in the treatment of this disease. I am in the habit of placing all of my rachitic children in the sunlight, and believe that the child's nutrition and general well-being are materially improved thereby. Of course, such orthopedic measures as are necessary to correct the deformities are indicated at the proper time.

"FLU" INFECTIONS

Immediately following the "flu," I have noted a number of swollen joints, as well as painful feet, that could probably be directly attributed to the same infectious agent as that of influenza. It has been my experience when such a low-grade micro-organism enters the tissues as, for instance, the sole of a foot, or a joint, that it causes a chronic and painful condition of the affected region characterized by more or less swelling, effusion, tenderness, pain and local heat, and especially characterized by its great chronicity. In this type of case, I believe we have in the application of sunlight a valuable adjunct in hastening cure.

It is necessary to add the usual orthopedic appliance needed to support the foot in these cases. While it is, of course, difficult to prove, I believe that we have succeeded in shortening the convalescence of many of the cases of infectious weak foot by the strenuous application of sun rays to the lower extremities for hours at a time.

CIRCULATORY DISTURBANCE OF THE FEET

Some time ago (August, 1921), I published a paper on this condition in which heliotherapy was advised. I believe that in cases of circulatory foot disturbance the patient can be improved by the use of heliotherapy.

In conclusion, it may be said:

1. That there are a number of other chronic infections, besides tuberculosis, which are advantageously affected by the rays of the sun when properly used.

2. There exist few dangers in the application of heliotherapy.

3. Heliotherapy can be used in the home as well as in the institution; it is, of course, preferable in the institution.

4. I believe the time has come for us to see to it that our hospitals use their roofs and porches and surrounding grounds for the application of heliotherapy.

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DISCUSSION

DR. J. H. BENDES, Oak Terrace, Minnesota: In dealing with heliotherapy there are two important things to take into consideration, one of which is, that heliotherapy is not a panacea for all ills, and secondly that it does not mean turning patients out into the sun indiscriminately and having the sun's rays play on them, and expect them to get well. Heliotherapy, properly applied, first in postoperative treatment for chronic infectious diseases, as gonorrheal arthritis, rickets and surgical tuberculosis, is an agent that stands alone.

Dr. Geist referred to the value of heliotherapy, as given in the mountains of Leysin by Rollier. It can be given not only in a mountainous climate, but on the plains as well, and in the city on hospital roofs. It is unnecessary to live in mountainous regions to apply heliotherapy.

Here in Minnesota we have given heliotherapy as late as the last week in November and the first part of December, starting as early as the first of March. Two years ago, at Glen Lake Sanatorium, we started the latter part of February, and had good sunshine three or four hours a day during the time we gave it.

Many patients, who lie in hospitals, covered up with blankets, if turned out into the sun, would get well. At

Glen Lake Sanatorium, at the present time, we have a case of osteomyelitis of the humerus. The boy was operated upon some time during the winter for osteomyelitis. What was done I do not know, but from the history of the case I should judge that the bone was scraped, the wound sewed up and the boy sent home. This boy, 15 years of age, came to the Sanatorium in April. He had ankylosis of the elbow, swelling and pain. All we did, was to give him the benefit of sunlight, apply traction to the arm, and he now has a straight arm, free from pain, and good motion. The same thing can be applied in the hospital as well as in a Sanatorium.

In chronic arthritis and rickets, and especially in cases of gonorrheal arthritis, a patient usually goes to the surgeon, because he has a lot of pain and deformity, but principally on account of pain, and the surgeon operates without benefit, but when heliotherapy is applied it is surprising how that pain is relieved. The patient knows there has been something done for him.

In applying heliotherapy to postoperative cases, a great many patients are benefited by it. Time and again, cases present themselves, in which wounds would not heal, and these patients have been steadily losing ground, but under the influence of heliotherapy a different picture is presented. The wound starts healing, the patient improves, and in fact in almost hopeless cases the patients get well.

DR. ARNOLD SCHWYZER, St. Paul: The subject of heliotherapy is a very interesting and important one, and I shall take the liberty of saying a few words regarding it.

Heliotherapy gave results to Rollier that we had thought impossible before. This was followed by some experimental work to try to find out what was really done. It is known that we have in the skin an organ that is more important than we have previously thought. A short time ago a great dermatologist in Germany stated that the function of the skin should be put on a par with the organs of internal secretion. In early childhood scarlet fever, measles, smallpox, or at any time erysipelas are localized in the skin, and these acute infections are taken care of. All this immunization is going on principally in the skin.

Outside of tuberculosis, they have had in Leysin very good results with osteomyelitis cases, also with infantile paralysis cases as to their general condition. From Leysin are reported results in various other conditions, even in pseudoleukemia. This is particularly true of one such case of pseudoleukemia. The man was so much improved that he became a mountain climber and bicycle rider. He then left Leysin, went down into the low land and worked in a factory. His condition became worse; but after returning to Leysin in the mountains for one year he was again on his feet. He is still living, it being seven years since treatment by heliotherapy was undertaken.

It was found that the insolation of the skin for half an hour increases so much the circulation in the skin that seven times more blood goes through the skin after insolation than before. This effect does not stop suddenly with the insolation, but continues for another two hours. This shows we have a most important effect. Furthermore, all the cases that come to high altitude and are exposed to the sun have a decided increase in the number of blood corpuscles and an increase of the hemoglobin.

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EDITORIAL

The Social Worker—The Modern Moses

Presently we have in St. Louis county a movement to unify all social and relief work under one board of commissioners, headed by a "director." The agitation has arisen from the very plausible source—a "Taxpayers' League"—whose watchword is "Efficiency and Economy"—the greatest possible use of the tax dollar.

No one need wonder that every taxpayer's ear is delicately attuned to this wave length, and he welcomes this message out of the air, regardless of the conflicting whistling tones that may accompany and confuse the message. In other words, the plan brings into bold relief the clash that is inevitable between the outspoken social worker and the doctor, when it comes to the oversight of endeavor that we hold to be chiefly medical.

For example, the bill planned would abolish our Sanatorium Commission, the Poor Board and the Work Farm Board. The first, dealing with a tuberculosis sanatorium, is certainly in large part a

problem of medical care and hospitalization; the second has for one of its chief duties the medical care and hospitalization of the poor, the aged and infirm—the great indigent class; the last has a good deal of medical interest in the care of the drunkard, the criminal and the "ne're-do-well." In the place of these various voluntary boards would come a salaried director, with four assistants (all social workers, presumably), governed or supervised by a political body of seven or nine appointed by the county commissioners. Out of this hodge-podge is supposed to come the economy promise!

Our Board of Regents of the University is a voluntary body; likewise, the State Board of Health and the Advisory Commission for Tuberculosis. The executive agent sponsoring and developing this bill declares, before numerous organizations, that, "The tendency of the times is to abolish voluntary boards and commissions, and put in their place efficiency experts and directors . . ."

The gentleman is quite correct in this, as anyone can see when we consider that Russia presently is in the hands of two directors, one with brains and the other with a bayonet. Presumably, if the man with the brains could handle the bayonet, only one would be necessary. Indeed, an echo comes from our legislative halls which would seem to indicate that there are many with us who think the Board of Regents should be abolished!

All of this is not an editorial effort to direct the attention of the membership of the Minnesota State Medical Society to certain local issues, even though they vitally concern St. Louis county. Rather is it intended to draw the attention of all our membership to the vital need of keeping up our interest in a variety of movements that cannot succeed without us. Do we wish the control and direction of our tuberculosis sanatoria to be handed over to laymen, to make of them stereotyped and soulless communities, with a statistical instead of a therapeutic atmosphere? What are we to say of medical inspection carried on in our schools, not under the direction of doctors, but under men who are a combination of statisticians and playground supervisors?

It is time that we were fully awake to these decisive issues, and each, by looking into his own community affairs, can see where our work lies. Our new Health Journal comes at a time when it focuses our attention upon these matters. Let us

wake up, or long before we have state medicine a large segment of medical practice will be dominated, directed and controlled by laymen, whose growing pride in profession and desire to perpetuate their kind, and to likewise justify their existence, will relegate us to the inoffensive rôle of *helpers*. It is from their ranks that they look to find the modern Moses who will lead turbulent and sick humanity into the "Promised Land"!

E. L. T.

Medical Publications

The following remarks are admittedly destructive in nature. We know of no solution of the problem of medical publications at large. That there is an inexcusably large mass of medical matter—good, bad and indifferent—being published today, all will admit. The impossibility of reading all that appears even in a more or less limited sphere is admitted by every physician.

When we consider the numerous state journals, national weekly, the journals devoted to the specialties, systems, text-books, new and revised, published in this country alone we must admit that the profession is suffering from a mental dyspepsia due to overfeeding. The result in most instances is that we read the American Medical Association journal, the State journal perchance and two or three other publications at best or in despair read nothing at all.

One of the disadvantages of such an array of publications is the difficulty in finding information on any special subject. Much is admittedly rehash and duplication and very little is actually original; and much of the original work does not stand the test of time. We are inclined to be faddists, as a profession, largely because it is easier to follow the leader than to make the effort to cerebrare. The experienced properly evaluates any innovation even though sponsored by a recognized leader but too often a published article is given undue reverence so commonly accorded the printed word, to the detriment of medical practice.

For this reason subjects presented at medical meetings should not be published indiscriminately but should be carefully judged before they are put in print. While editors may disclaim responsibility for ideas expressed in original articles (so-called), a responsibility exists and should be assumed by some one. Editorial comment is of

value but obviously impossible in all cases. Printed discussions of published papers, therefore, serve an important function. Nor should such discussions be entirely extemporaneous but one or two at least should be pre-arranged and carefully prepared by some one especially qualified by experience in the particular subject to give an unbiased opinion.

The Tower of Babel

A recent contributor to the National Geographic Magazine discussed the jangle of tongues that operate in all Europe and east of Russia, insulating these varied peoples from each other. The only tongue that retains its continuity steadfastly with neither a nationalistic background nor a patriotic literature, is that of the Nomad Gypsies. All the others during the past century instead of merging for common advantage have been the keener differentiated by the development of modern printing and the demand that the "national" tongue be used in court and schools. Rumania, formerly with a free and logical use of French, is stated to have reverted to its cumbersome, less expressive inherited speech. Norway in the same way, instead of continuing the perfectly useful Danish, saw in the use of that language an intimation of previous servility and immediately cast it off, creating another racial barrier. The Irish and the Poles (always with much in common) have taken two different tongues and inflicted them upon their youth at a time when the growing mind in all countries finds quite enough to crush it to mediocrity by the extreme burden of a world curriculum that all must subscribe to. All of this obtained at a time when modern methods of transport and communication have made aloofness impossible, and unnatural boundary lines have become a menace to comfort and growth if not even to existence.

Fancy what it would mean if each of our states here, or provinces in Canada, had a rigid frontier and a language even more repelling than customs officials! Visualize the freedom of movement travelers, business representatives, not to mention "bootleggers," enjoy here in America and one can see the great handicap offered by the senseless tendency to further perpetuate a diversity of language chiefly in order to draw attention to a "glorious past"—a history valuable, interesting and productive; but nations must begin to prove their right to endure.

ance based not upon *what they were*, but *what they are*.

This is an introduction to the statement of a truth too little understood in medicine: No small country can have a medical literature of any significance because no publisher can afford to bring it out with such a limited number of prospective purchasers. This is doubly true of books but also includes magazines and current literature. The proof of it is seen in the fact that the German literature has been the medical pabulum for a host of other countries near and far: all the Scandinavian countries, including Finland; the Balkans; much of Russia (despite its great size); Japan; and likewise large portions of South America.

The French have likewise a liberal following, but we do not exaggerate when we state that English has come into an ascendancy that is quite unquestioned.

Some enthusiasts saw this world linguistic problem a long time ago and attempted the impossible, calling it "Esperanto," but like the deaf woman who studied "lip reading," she found she could talk perfectly with her teacher and a few pupils but with no one else. So Esperanto, where learned, has simply furnished another puzzle to solve and created another memory inquisition. It is useless for us to assert that with England's aid our common language encircles the globe and should therefore become at least the world's medical language. The recent ascendancy of the French will give them a new impetus to cast off everything that is outside their immediate influence—for this they will pay a very great penalty. The most extreme economic reduction of the Germans will not (for many decades at least) destroy their extremely virile literature. No medical library can possibly afford to be without it with its rich inheritance from the past and keen analytical production of the present.

Therefore we are left with the absolute need of perfecting ourselves (and our developing students) in the free use of the three great tongues rich in medical literature—English, French and German. Will all three survive? That is a hard question to answer. It is easier to say that no others will come up despite the blighting babble of dialects that is presently splitting the world up into senseless racial units. Certainly the English-speaking peoples have a well developed medical literature. We cannot ask the French and Germans to recede in our favor;

we must in all reason coöperate with them and ask to go forward with them.

The problems involved must be keenly appreciated by every English medical publication, including this magazine. The character of the material presented must be equal to the heavy responsibility involved; it must aim to a far wider circulation than among our own people. To accomplish this will require the keenest and closest analysis of all of our offerings. It calls for a fuller and a better knowledge of the needs of countries to which we wish our literature introduced; it bespeaks for a world-wide, instead of a provincial point of view.

E. L. T.

MISCELLANEOUS

GORGAS MEMORIAL

The cornerstone of the Gorgas Memorial Institute of Research in Tropical Diseases and Preventive Medicine was laid at Panama on February 18, 1923, with impressive ceremonies and in the presence of an assembled concourse of people that included members of the American College of Surgeons from the Steamship Vandyck. President Porras of the Republic of Panama, following the rendering of the national anthem, delivered the following address:

LADIES AND GENTLEMEN:

I experience profound satisfaction from the fact that it is my privilege to lay the cornerstone of the Institute of Tropical Medicine which Panama dedicates to William Crawford Gorgas, to perpetuate his memory here, on the shores of the murmuring Pacific and in close proximity to that thoroughfare which—hurriedly in former days as though pursued by the phantom of death, and lingeringly today as though regretting the brevity of time which compels them to forego the delights of our benign and even climate, the beauty of our country's unchanging verdure and the incomparable blue of our sky—has been used by men of every nationality, for whom Gorgas cherished only sentiments of deep humanity which prevailed always over every prejudice of race, nationality, birth or class.

This sense of satisfaction that I experience now is derived primarily from the fact that I was a friend of this man whose memory we are today assembled here to tribute, and as such I was in an admirable position to fully judge the purity of his noble and good heart and further, being one of the old men of the days when he lived in our midst, I am better able, from experience, to appreciate more fully than the men of the younger generation, the great work of health, life and happiness which this great man accomplished for my country.

The monument which we will erect here will be an expression of Panama's gratitude to the man who proved beyond the peradventure of a doubt that the tropics could be made habitable for all the races of the earth. We are indebted to the genius of Gorgas for the transformation of

Panama from a fever-ridden land to the paradise we now live in and the benefits of health which engenders content, activity, clear-mindedness, energy and even valor. Therefore, we consider that Gorgas, to a certain extent, belongs to us also, because it was here that he saw his greatest effort to lighten the burden of a suffering humanity crowned with success.

It is the privilege of great men, sages, discoverers, heroes and martyrs, whose activities, teachings and examples are not circumscribed to the narrow confines of the land of their birth and whose achievements in the world have been beneficial to the majority if not to all their fellow-beings, to be universally loved. Such men—and Gorgas was one of them—cannot be citizens of one particular city, town or village; every city and every nation of the earth claims them; they are the real citizens of the world.

As in the case of Esculapius, when it was found necessary to enlist the services of an oracle to determine in which of the cities of ancient Greece which disputed this honor was his birthplace, and, as in the case of Christopher Columbus, who has been declared an Italian, a Spaniard and more recently a Jew, the birthplace of Gorgas, I am informed, is disputed, both Alabama and Georgia claiming this honor. However, Gorgas does not belong exclusively to the United States of North America where he was educated. Cuba and Serbia, Bulgaria and Ecuador, Panama and South Africa, all have claims to him as a result of his having lived and worked among them for the good of the human family.

The work accomplished in the world by the great Gorgas is immense, immeasurable. Of Hippocrates it may be said that he was the first to divorce medicine from witchcraft and the ecclesiastical mysticism of his times; of Galen, that he was a great physician and writer to whom is attributed the authorship of about 500 books intended to popularize the practice of medicine; of the great Pasteur, de Kock, Ramon Cajal y Cajal, Ehrlich, Finley and Rose, that they penetrated far into the hidden secrets of the invisible, the infinitesimal world; of Metchnikoff that he evolved the famous Phagocyte theory and with Roux, Chamberland and Calmette, collaborated in and continued the work of the great Pasteur; but how can we describe Gorgas, who solved the apparently impossible problem of making the tropics habitable, thus complementing the marvelous work of God Who created us in order that we might live on this terrestrial globe and be happy on it? Gorgas destroyed the morasses of death and gave us pure drinking water and purified the air of our exuberant tropical forests and our colonial cities. Gorgas redeemed the tropics.

I can still remember, and it seems to me a horrible nightmare, the time, fifty years ago, when, on my way to Bogota to finish my studies, I found it indispensable to spend a night in Colon. Sleep during that night was impossible for me because of the constant and tormenting bites of the mosquitoes whose incessant buzzing smote on my ears as though they were the discordant notes of an infernal serenade. These minute tormentors were so numerous that by clutching at the apparently empty air I caught handful after handful of these tormenting pests. Neither can I forget conditions as they prevailed when I returned from college ten years later and entered the

employ of the French Canal Company. From that time I was able to realize or at least suspect the underlying cause of the Frenchmen's failure in their attempt to construct the trans-Isthmian waterway. They constructed beautiful residences and tree-lined avenues and admirably organized their offices; but they did nothing, in fact they knew nothing, about tropical sanitation and apparently never suspected its worth.

In those days of long-ago, it was the most natural thing for one to promenade the city's thoroughfares holding a handkerchief to one's nostrils, to keep out or lessen the stench contaminating the air as a result of decaying vegetation, stagnant or putrid puddles and primitive or defective sewerage. On every hand one encountered well beloved friends hastening home in the grip of malarial chills or some other equally pernicious fever; or encountered on every street, people clothed in the somber black garb of mourning with the marks of grief and despair deeply impressed on their features; or daily heard the lugubrious tolling of church bells announcing the death of a friend or a relative; or was frequently summoned to attend the last rites to a departed friend laid low by the deadly miasmas of our unsanitized tropical homeland.

However, thanks to William Crawford Gorgas, these days have passed never to return and our tropical home has become one of the world's health resorts.

In the days of ancient Greece, shrines and temples were erected in the mountains and at the Springs of Health in honor of Esculapius, the God of Medicine. To these places of worship and thanksgiving an endless stream of sick and afflicted persons came to offer sacrifices and deposit votive tablets on his altars. And it is a temple such as these that we will erect here as a living testimonial to the memory of the man who brought so much comfort to the Isthmian family and the tropical world in general.

On this first stone, there will arise a great temple dedicated to this great man and to this shrine of Gorgas will come in a never ceasing pilgrimage, not only our sick compatriots but also the afflicted thousands from other points of the tropics to seek health with undying faith in the name of Gorgas. And they will depart hence for their distant homes, healed and happy, with tears of gratitude in their eyes and blessing our beloved country and the great and humane work of William Crawford Gorgas, the benefactor of humanity and the redeemer of the Tropical World.

THE STANDARDIZATION OF BIOLOGICAL STAINS

On March 2d, at the Chemists Club in New York City, there was held a meeting of the Executive Committee of the Commission on Standardization of Biological Stains. The members of this Committee are: H. J. Conn, Geneva; F. B. Mallory, Boston; L. W. Sharp, Ithaca, N. Y.; J. A. Ambler, Washington, D. C.; and S. I. Kornhauser, Louisville, Ky. The meeting was also attended by C. H. Herty to represent the Synthetic Organic Chemical Manufacturers Association, and by F. P. Garvan and W. F. Keohan to represent the Chemical Foundation. The meeting is a matter of interest to everyone in the medical profession.

All physicians realize the need of dyes for staining specimens in the laboratory diagnosis and investigation of dis-

ease. It is not perhaps so generally realized that the dyes used for this purpose, in order to give constant results, must be of very precise chemical composition; and yet it is a very difficult matter for either the chemist or the biologist to control their composition. Before the war all stains were imported from a single German firm. This firm did not manufacture stains, but bought textile dyes in batches of considerable size, and after some preliminary testing bottled them and sold them under its own name to the biological laboratories of the world.

When the war broke out the American laboratory was deprived of this foreign source of stains. After the pre-war stocks already on hand had given out, much difficulty was experienced in getting stains of the quality necessary. The Society of American Bacteriologists began an investigation of American-made dyes that were being sold as biological stains. The results of this investigation were so promising that it proved possible to secure the assistance of the National Research Council, through whose agency a co-operative investigation was arranged among the members of several national societies. Recently the work has been organized under a special commission independent of the Research Council but still representing the different national societies that were co-operating in the earlier work.

At the executive committee meeting of this Commission just held, the very encouraging results of the work were reported. It was shown that already the stains available in America are in practically all cases as good and sometimes better than the best of the pre-war stains. The most important fact brought out at this meeting was that while the pre-war stains were standardized only in an empirical way, by buying large batches without knowing the exact composition of the dye, they must now be standardized on the basis of pure chemicals.

The reason for this is because it is proving that in some cases the impurities present in the pre-war stains were very necessary. Sometimes these impurities were other dyes and sometimes supposedly inert materials like dextrin. In all such cases the task plainly before the Commission is to find out what the impurity is which was responsible for the good staining qualities of the impure product. Then in the future the users of stains must demand that these impurities be present, not as impurities, but as intentionally added ingredients. When this has been done and the products are labeled and used accordingly, the American stains will become standardized in a true sense of the term.

Very shortly the Commission will begin issuing certification of definite batches of stain that it has found satisfactory. These stains will be put on the market under a special label bearing the name of the Commission. Users of stains must be on the lookout for products bearing this label.

Buyers of stains must also watch for spurious imitations of this label put out by unreliable concerns. Any form of certification appearing on a stain label not bearing the name of the Commission is merely a certification by the manufacturer or dealer himself, and as such has no value.

The Chemical Foundation has very kindly agreed to support the work of the Commission financially.

AMERICAN RED CROSS

A special committee of the American Red Cross known as the Health Advisory Committee was appointed in October, 1922, to investigate and report on the question of its peace-time activities. Certain members of the medical profession have questioned at times these Red Cross activities. This committee composed of ten physicians who are experts in public health matters have, after a careful inquiry into the situation, unanimously expressed themselves in favor of the national society adopting a definite program of education in individual and public health matters. There has been a great variation in the character of the activities carried on by various chapters and a deplorable lack of uniformity in activities in general. The policies recommended include the organization of classes for the study of individual hygiene in the home and the general assistance of community health activities which naturally are the functions of the constituted public health authorities. Particular emphasis is laid on the desirability of obtaining the approval of the state, county or city health officers in contemplated health work. It is also recommended that chapters ask the local medical society to be represented on the executive committee of the chapter. Certain valuable suggestions are made with the idea of correcting certain abuses in conjunction with public health nursing.

The following quotation well expresses the spirit of the report:

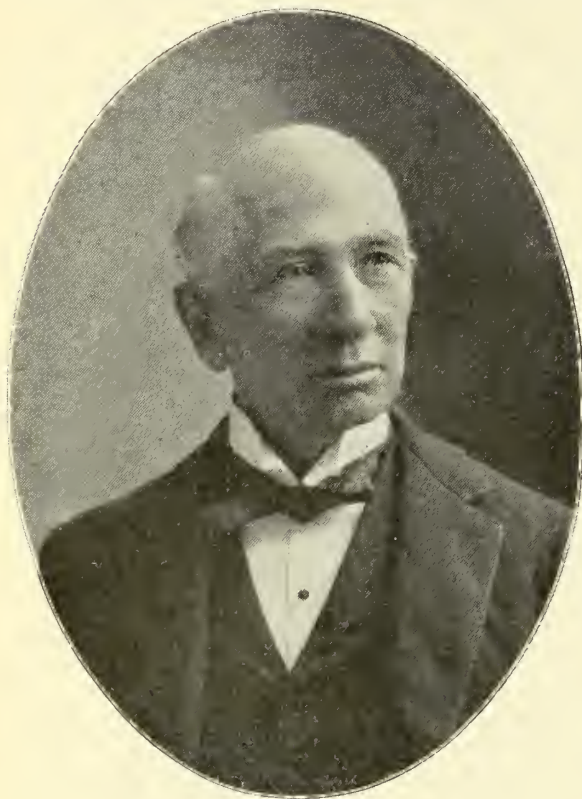
"The primary incentive for undertaking a comprehensive Red Cross Health Program lies in the fact that the greatest present need in the field of public health is the need for educating the individual citizen and mobilizing popular support for the work of existing official and voluntary health agencies; and in the fact that the Red Cross through its Chapter organization is possessed of exactly the machinery best fitted for carrying out such tasks. Incidentally, however, we believe that the American Red Cross would itself be materially strengthened by the adoption of such a program. . . . If we can only show to the average citizen that the burden of preventable disease is indeed a menace to the prosperity of the state, as grave as the menace of a foreign foe, we shall find ready response. The Health Program outlined above gives to the Red Cross member the advantage of organized instruction in the art of living which will protect him and his family from danger; and it makes an inspiring appeal to him to give his services in the task of safeguarding the community as a whole against the evils which threaten it in the form of preventable disease."

WHY IS A COUNTY MEDICAL SOCIETY?

You certainly can spare two nights a month for improving your mind. Come to the meetings. Perhaps you can tell the others something that will help them. Help make these meetings lively, do your share. If you won't read a paper or report a case, get up and discuss the papers and cases that are presented.

If you can't improve your mind or won't share your knowledge with your neighbor, come to the meeting anyway. The seats are comfortable and no one will disturb your sleep.—*Denver Medical Bulletin*.

OBITUARY



DR. ASA WILDER DANIELS

Dr. Asa Wilder Daniels, one of the most prominent of Minnesota's pioneer physicians, died at his home in Pomona, California, Tuesday, February 27, 1923, following a sudden attack of acute bronchitis.

Dr. Daniels, who had attained the advanced age of 94 years, was born in Stafford, New Hampshire, on Jan. 15, 1829. His parents were Joseph S. and Roxana H. Daniels, who were pioneer settlers of northern New Hampshire. His father died when he was very young and his mother moved to Boston, where he was reared and educated.

After going to Boston Dr. Daniels secured an academic education at Lancaster and then studied medicine in the office of his uncle. He received his degree from the Boston Medical School, and on being graduated in June was united in marriage to Miss Emma Brown Evans of Philadelphia. Immediately after the wedding the young people came west to Minnesota, Dr. Daniels having secured an appointment as government surgeon at the Lower Sioux Agency near Redwood Falls.

Dr. Daniels and his bride reached St. Paul by steamer on July 4, 1853, now nearly seventy years ago, and after a brief stay in the territorial capital continued their journey to the agency. In the eight years that he worked among

the Indians, Dr. Daniels had many interesting experiences, and the story of his career throws a flood of light upon western frontier life in those trying and romantic times.

To the young doctor fell the distinction of being the first man to administer chloroform in this section of Minnesota, if not in the territory.

For eight years Dr. Daniels was a government surgeon at the Redwood Agency, but in 1861 he resigned and began the practice of medicine in St. Peter. He conducted his practice under the most trying conditions. Inured to the hardships and the privations of the frontier, he spent many days and nights in the saddle, and often was known to ride forty miles or more in response to calls for his services. His experiences during these early years make the work of the modern doctor seem dull and commonplace.

A year after Dr. Daniels began his practice in St. Peter, in August, 1862, came the terrible Sioux outbreak. When word came that Little Crow and his warriors had attacked New Ulm, Dr. Daniels volunteered to accompany Judge Chas. E. Flandreau's expedition for the relief of the beleaguered village. In the siege and battles that followed, the four surgeons with the defending forces—Dr. Daniels of St. Peter, Dr. Ayres and Dr. Mayo of Le Sueur, and Dr. Wescheke of New Ulm—rendered invaluable service. They established a temporary hospital, where they dressed the wounds of the injured and cared for them during the fighting.

When peace had been restored along the frontier, Dr. Daniels resumed the practice of his profession and followed it actively until 1900. In that year he bought a home at Ponca, but for five years more he continued to return to St. Peter during the summer months and receive his patients in the old way.

Dr. Daniels devoted himself earnestly to his life work. In 1866 he took a postgraduate course at the Ohio Medical college at Cincinnati and received a degree from that institution. Later he served for a number of years on the Minnesota State Board of Health. He was one of the founders of the Southern Minnesota Medical Society, which honored him and itself by making him a life member. He was the first physician to be elected to honorary membership in the Minnesota State Medical Association, in which he took an active interest. He was also a member of the American Medical Association.

He held a membership in the Minnesota Historical Society, and in the later years of his life he took a great deal of interest in its affairs. He was an active participant in some of the most stirring incidents of the early days, and his wonderfully retentive memory enabled him to accurately recall countless unpublished details of them. He is the author of a number of pamphlets which are regarded as very valuable contributions to Minnesota history. About two years ago, at the invitation of Dr. W. W. Folwell, he collaborated with the latter in the preparation of two chapters of Dr. Colwell's history of the state, probably the most pretentious work of its kind which has been attempted.

All his life Dr. Daniels interested himself in the affairs of the community, the state and the nation. He was a man of wide experience, and his broad information enabled

him to form accurate judgments, which he set forth with all the force of a vigorous personality. One reason for this sustained interest in current events, perhaps, was the fact that it was given to him to enjoy good health until his very last illness, his only physical infirmity being somewhat impaired hearing. At his home in California, he lived free from pain, enjoying good health, enjoying living and enjoying his friends. Of these latter he had literally thousands, and it is an impressive tribute to the worth of the man that, at the close of a long and active life, only good is spoken of him.

His home life was ideal. Mrs. Daniels preceded him in death in March, 1900, and of his seven children only three remain to mourn the death of their father. They are Mrs. John V. I. Dodd, of Pomona; Dr. J. W. Daniels and County Surveyor H. W. Daniels, of St. Peter. There are five grandchildren and five great grandchildren.

Dr. Daniels retained the use of his faculties until the end. The day he was taken ill, his son, Dr. J. W. Daniels, received a letter which was written on Feb. 20th. The author had written it on his typewriter, and it was drafted in the forceful characteristic style that marked all his communications. He closed it by saying: "All states have their advantages, but Minnesota is one of the best."

JULIUS PARKER SEDGWICK

The Faculty of the Medical School of the University of Minnesota records in sadness the addition of the name of Julius Parker Sedgwick to the lengthening roll of its honored dead.

The Faculty keenly feels the grievous loss his going means to the family and to the many friends by whom he has been greatly beloved, to the School he has ably and devotedly served, to the community he has honored by his clinical and social service, to the profession in which he has stood forth as a striking example of the modern type of the scientific physician and investigator.

Fallen all too early a victim to the ravages of disease, yet in his short span of time he has lived a life unusually full, he has given himself generously to the good of his fellows, to the uplift of medical education, to the pursuit of research, to the welfare of infancy and childhood in his own country, as he did to the betterment of the children of France in the Great War.

His name is written into the literature of medicine, but it is also written in the hearts of many mothers and in the lives of many of the men and women of the future whose early years he has tended and whose imperilled health he has restored.

The Master of Men "took a little child and set it in the midst of them." It was His symbol of service to humanity and it serves anew as the symbol of the life and the love of our Friend of the Children who has gone out and gone on.

His associates of the Faculty desire to express to his family their affectionate sympathy and the assurance that his memory will be cherished in the history of the School.

DR. MILTON A. TROW

Dr. Milton A. Trow, 70 years old, one of the oldest practicing physicians in the state, died suddenly at his home in Chatfield, March 16, 1923, of heart disease. Dr. Trow had been a physician forty-five years, most of that time practicing in Chatfield. Of late years he had partly retired.

Dr. Trow is survived by a sister in the east.

DR. C. E. DAMPIER

Dr. C. E. Dampier, of Crookston, councilor of the first district of the Minnesota State Medical Association, died at the Bethesda hospital in Crookston, Tuesday, February 20, 1923, at the age of 68 years. Death was due to pneumonia.

DR. JOSEPH McCUSKER

Dr. Joseph McCusker, of Glenwood City, Wisconsin, died at his home February 3, 1923, at the age of 31 years, following an acute attack of pneumonia.

Dr. McCusker is survived by his mother, Mrs. Sarah McCusker, by one brother, Dr. Charles McCusker, with whom he was associated in the practice of medicine, and one sister, Miss Margaret McCusker. He was a former resident of Litchfield, Minn., and a graduate of the high school. He received his medical education at Marquette University. Dr. McCusker was a very lovable man and his early death is greatly deplored.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNEAPOLIS CLINIC WEEK

The annual Clinic Week in Minneapolis is scheduled for April 17th to 20th. This meeting will immediately follow that of the sectional meeting of the American College of Surgeons which will be held at the Hotel Radisson, Minneapolis, April 16th, making it possible for visiting physicians to attend both meetings.

Clinic Week headquarters will be at the Hotel Radisson. Clinics will be given each morning by Minneapolis physicians at the different hospitals, where attempts will be made to demonstrate cases in every field of both medicine and surgery. Each afternoon from 3:30 to 5:30 meetings will be held at the Hotel Radisson. Demonstrations of clinical cases and clinical specimens will probably displace the addresses and symposia of former years. It is impossible at this time to secure even a tentative program of the afternoon meetings but cases of encephalitis lethargica will probably be shown. The treatment of diabetes with insulin will also be explained and cases thus treated will be demonstrated.

Arrangements are being made for the entertainment of visiting ladies.

Dr. John R. Murlin, of the University of Rochester, N. Y., is to give the address at the annual meeting of the Hennepin County Medical Society to be held during Minneapolis Clinic Week, April 16th to 21st. The subject of Dr. Murlin's address is "PANCREATIC EXTRACTS IN THE TREATMENT OF DIABETES."

An invitation is extended to all members of the State Medical Association to attend this banquet on the evening of April 17th, the exact time and place of which will be announced later.

AMERICAN COLLEGE OF SURGEONS, SECTIONAL MEETING

The sectional meeting of the American College of Surgeons will convene in Minneapolis Monday, April 16, 1923. Headquarters will be at the Hotel Radisson.

The first meeting will be held at 2:00 P. M. in the Gold Room, where addresses will be given on subjects related to hospital management. A round table conference will follow this part of the program.

Special invitations have been sent from Chicago to hospital superintendents, boards of directors and other hospital officials to attend. The public is also invited and it is expected that physicians will attend in large numbers.

Fellows of the American College will meet at 4:30 P. M. for a business session to elect state executives for next year. The work of the college, its organization in detail and its various departments will be outlined by Allen Craig, associate director of the American College of Surgeons. The address will be illustrated by lantern slides. Members are urged to attend and physicians not members are invited.

The community Public Health meeting will be held at 8:00 P. M., which is part of the effort the college is making to assist in the great movement for better health. Addresses will be made by visiting members which promise to be short, snappy and interesting to the general public.

THE A. M. A. MEETING IN SAN FRANCISCO

Arrangements for the American Medical Association meeting, which will be held in San Francisco, June 25 to 29, 1923, are rapidly advancing to a state of completion through the activity of the local Committee of Arrangements, of which Dr. W. E. Musgrave, San Francisco, is chairman.

The American Medical Association is fortunate in that all of its section meetings, the scientific exhibit and the commercial exhibits and registration bureau, as well as the meetings of the House of Delegates, will be under one roof at San Francisco. The Exposition Building is a magnificent building, well adapted for the purpose of the Association. San Francisco is abundantly supplied with good hotels and there need be no fear that good accommodations for all who will attend the meeting may not be had.

Many social, sight-seeing trips and tours are being arranged to suit the convenience of visiting Fellows and

their friends. Monday and Tuesday, June 25 and 26, will be given over to a series of nearly one hundred Diagnostic Clinics. These will be given in the accredited hospitals of San Francisco and Oakland by both visiting and California Fellows and will cover a variety of subjects. Monday and Tuesday, July 2 and 3, post-convention Diagnostic Clinics will be held in different places in the state, under the auspices of one of the forty-one county medical societies or hospitals accredited by the Council on Medical Education and Hospitals of the A. M. A.

Arrangements have been completed for an Official Special Train, Chicago to San Francisco, to accommodate members attending the convention. The Special Train will leave the Chicago Passenger Terminal, Chicago and Northwestern Railway, at 11:30 P. M., Thursday, June 21. This train will arrive at 3:00 P. M., June 22, in Omaha, where it will be possible for Minnesota physicians to join the party. The schedule has been carefully arranged so that practically all the scenic points of interest, including Denver, Colorado Springs, Pueblo, the famous Royal Gorge, Salt Lake City, the canyon of the Feather River and California's capital, Sacramento, will be passed during the daytime. The train will arrive in San Francisco at 5:45 P. M. Monday, June 25. For the benefit of those who will be unable to leave on the Official Special Train, June 21, or who desire to reach San Francisco via the shortest and most direct route, arrangements have been made for special sleeping cars on the "San Francisco Overland Limited" leaving the Chicago Passenger Terminal, Chicago & Northwestern Railway, 8:10 P. M. Friday, June 22, and arriving in San Francisco, 2:30 P. M. Monday, June 25. The second schedule lists the train as leaving the Union Pacific station in Omaha at 9:45 A. M., June 23. Those desiring to take advantage of traveling on the Official Special Train should communicate with Mr. H. G. Van Winkle, General Agent, C. & N. W. Ry., 148 South Clark Street, Chicago.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Northern Minnesota Medical Association to be held June 4, 5, and 6, 1923, in Alexandria, promises to be most interesting according to the plans outlined by the program committee, of which Dr. W. L. Burnap, Fergus Falls, is chairman.

The scientific program will be largely clinical and includes the following in the list of participants: Dr. Willard Bartlett, vice president of the American Medical Association, St. Louis, Mo.; Drs. A. J. Ochner, A. A. Goldsmith, Paul B. Magnuson, Chicago; Dr. J. V. I. Brown, Milwaukee; Drs. R. D. Carman and H. E. Robertson, Rochester; Drs. Charles Lyman Greene, George K. Hagaman, C. N. Hensel, Saint Paul; Drs. Frank Bissell, F. C. Rodda, Max Seham, H. E. Michelson, Minneapolis; Dr. Olin W. Rowe, Duluth.

Special musical programs, golf and tennis tournaments, automobile excursions, dancing parties Monday and Tuesday evening, and fishing are listed as the various forms of entertainment planned for guests at the convention. Sinclair Lewis, the novelist, brother of Dr. C. B. Lewis, who is president of the association, will speak before the association Monday evening, June 4.

OF GENERAL INTEREST

Dr. Haldor Sneve, of Saint Paul, is planning to move to Redlands, California.

Dr. and Mrs. L. L. Hardt are the parents of a baby daughter, born February 28.

Dr. Ramsey, of Tasmania, who is in this country on a clinical trip, is visiting the Mayo Clinic.

Dr. and Mrs. J. G. Saam, Eveleth, are now in Chicago, where Dr. Saam is continuing his practice.

Dr. and Mrs. J. R. Sturre, of Eden Valley, are the parents of a son, born Tuesday, February 20.

Dr. A. C. Matthews, formerly of Napa, California, has located at Becker for the practice of his profession.

Dr. Thomas Arneson, who formerly practiced medicine at Audubon and Twin Valley, has located at Hitterdal.

Dr. A. E. Benjamin and Dr. Irving C. McDonald, both of Minneapolis, have returned from a two weeks' sojourn in Florida.

Dr. Julius Johnson has returned to his practice in Minneapolis following the completion of a postgraduate course at Harvard University.

Dr. John W. Bell, of Minneapolis, has returned to active practice from the south, where he spent several weeks following a long illness.

Word has been received of the death of Mrs. W. H. Gaugh, wife of Dr. W. H. Gaugh, Granada, which occurred Wednesday, March 7, 1923.

Dr. R. T. Glyer has disposed of his medical practice at Broton and has left for California, where he and Mrs. Glyer will make their home.

Dr. H. F. Helmholtz, of Rochester, recently spoke before the Jackson County Medical Society, Kansas City, Mo., on the subject of "Pyelitis in Infancy and Childhood."

Dr. Hugo Branyan, of Wabasha, left the latter part of March for Waukegan, Illinois, where he will be associated in the practice of medicine and surgery with Dr. C. E. Ambrose.

Dr. and Mrs. W. J. Mayo, of Rochester, have returned from a three weeks' cruise on the Mississippi. They were accompanied by Dr. and Mrs. D. C. Balfour and Mr. and Mrs. J. H. Kahler.

Dr. C. E. Proshok, of Jordan, has resigned his position as house physician and surgeon at Mudbaden Sanitarium and is now in Chicago, where he will take six months' postgraduate work.

Dr. Burton Rosenholtz has resumed his practice at 611 Lowry Bldg., Saint Paul. Dr. Rosenholtz recently returned from Europe, where he spent some time in the further study of diseases of children.

Word has been received that Dr. McDougald, of Le Sueur, who was reported ill with typhoid in New York, where he is doing postgraduate work, has fully recovered and is again able to attend to his studies.

Dr. Robert L. Wiseman, president of the Chisago-Pine County Medical Society, has returned to his home in Pine City following an operation which he underwent at St. Luke's Hospital in Saint Paul last month.

Dr. Hazel D. Bonness, of the Minnesota State Board of Health, recently accepted appointment as chief of the child welfare division of the Montana State Board of Health, Helena, Montana. She will succeed Dr. J. J. Sippy.

Professor Leon Asher, Head of the Department of Physiology of the University of Berne, and Director of the Physiological Institute of Berne, Switzerland, gave a series of Mayo Foundation lectures February 27 and 28 and March 1.

The new Shriners' Hospital, located on the River Boulevard on the boundary line between Saint Paul and Minneapolis, was formally opened in March under a staff of Twin City orthopedic surgeons, Dr. Wallace Cole, of Saint Paul, being the chief surgeon.

Dr. John M. Conroy, of Nopeming Sanatorium, has resigned and assumed his new duties as resident physician of the Tri-County Pure Air Sanatorium at Salmo, Wisconsin, March 16. Dr. Conroy will succeed Dr. M. S. Homer, of Ashland, who recently resigned.

Announcement has been made of the marriage of Miss Helen Thompson, of Minneapolis, to Dr. William B. McMultrie, of Marble, which occurred at the home of the bride's parents, February 6. Dr. McMultrie was graduated from the school of medicine at the University of Minnesota in June.

The officers of the Women's Auxiliary of the Minnesota State Medical Association are desirous of obtaining the names of the wives of members of the State Medical Association. Married members are urgently requested to send in their wives' names and addresses to Mrs. Rood Taylor, Secretary, 4222 Harriet Avenue, Minneapolis, Minn.

Dr. C. A. Hedblom, of Rochester, recently returned from High Point, N. C., where he read a paper before the Tri-State Medical Association. Dr. Hedblom also addressed the Ingham County Medical Society, Lansing, Michigan, and attended the meeting of the Northeastern Indiana Academy of Medicine at Kendallville, Indiana, en route home.

Dr. C. H. Mayo, Rochester, sailed March 26 on the Aquitania for Europe accompanied by Mrs. Mayo and their daughter, Miss Edith. Dr. Mayo plans to present a paper prepared in conjunction with Dr. H. S. Plummer on "The Function of the Thyroid Glands and the Lowering of Mortality in Surgery of the Thyroid," at the Swiss goiter conference in Basil in April. Dr. Mayo expects to return on the Aquitania May 12, arriving in New York, May 20.

The Eyesight Conservation Council of America is anxious to bring to the attention of school authorities and school physicians the desirability of instituting Eyesight Conservation Days in the schools throughout the country. It is recommended that such days be designated annually or semi-annually preferably at the beginning of each school year and that the day be set aside for testing vision of the pupils by school physician or teacher. Those detected with defects of vision may be given cards to be taken home to parent or guardian with the recommendation that the child's eyes be examined by an oculist. In this way the many children who are handicapped by poor vision can be detected and fitted to glasses. Those interested should communicate with the General Director, Times Building, Broadway and Forty-second Street, New York City.

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

STATED MEETING HELD NOVEMBER 12TH, 1922
THE PRESIDENT, DR. R. C. WEBB, IN THE CHAIR

COMPOUND, COMMINUTED FRACTURE OF THE LOWER THIRD OF THE TIBIA AND A SIMPLE FRACTURE OF THE UPPER THIRD OF THE FIBULA

Dr. S. R. Maxeiner presented a male patient, aged 40, who was admitted to the General Hospital October 10th, 1922, with the following history of injury:

On October 5th in trying to jump and kick in his house he caught his left foot, tripped and fell. A doctor was called who said the leg was broken and a cast was applied. The skin was not broken at that time. Because of the cast being uncomfortable he removed it himself and found the cotton next to the leg bloody.

On examination of the leg October 10th, there was seen a discolored dark area about 10 cm. in diameter over the lower part of the tibia, about two-thirds of the way from the knee to the ankle. In the middle of this area was a sinus opening through which there was a small amount of seropurulent discharge. There were several vesicles about this area. X-rays showed a compound, comminuted fracture of the lower third of the tibia and a simple fracture of the upper third of the fibula. He had a temperature of 104 and his pulse was 82. Hot saline packs were applied for two days and the leg placed in a pillow splint. His leucocyte count was 11,500. He was markedly irrational at night. On the 12th he was extremely irrational but his white count fell from 11,500 to 9,000 and the leg seemed to improve. He gradually regained his rational state of mind and a neurological consultation was requested and they agreed with us that the delirium was not the result of the fracture and his mental condition, temperature and leucocytosis did not indicate an infection severe enough to account for his irrationability. He had a compound, comminuted fracture which was infected, but at the same time the delirium was from another source (due to moonshine). Because we could not control him and the fact that the leg needed extension, on October 14th we put a Steinman pin through the heel and suspended a fifteen pound weight from the foot. He then went through his delirium and came to himself in a few days. X-ray after application of the extension shows a good position of the fracture. X-ray after removal of the pin shows the bones of the leg in fairly good position and the formation of callus and deposit of calcium.

FIBROSARCOMATA OF THE HAND

A second case, presented by Dr. S. R. Maxeiner, was a man, fifty-three years of age. This patient, a carpenter, was working for some time this Fall as a harvester and threshing man. On October 31st, 1922, he was admitted to the General Hospital. His complaint was that a tumor had been developing in the palm of his left hand for about eight weeks. The first he noticed was a callus and some

swelling and he had pain in the hand at times. He lifted off the callus a couple of times and got considerable relief. The mass grew steadily larger and was painful, particularly in using the hand and holding a pitch-fork.

The growth in the palm of the left hand was centered just proximal to the metacarpophalangeal joint of the middle finger. There was an elevation of the tissue measuring 3.5 cm. transversely and 2.5 cm. horizontally. The mass was firm in consistency and not easily movable under the skin. The tendon of the middle finger was tense and prominent proximal to the mass. There was some numbness of the middle finger.

Laboratory reports of the urine and Wassermann were negative.

Before the patient was admitted to the hospital a scalpel was introduced into the hand and the suspected fluid did not evacuate. Then he came to the hospital and today (Nov. 2nd) under local anesthesia the tumor was removed for diagnosis. Grossly it presented somewhat the appearance of tuberculous glands in a bunch and showed more than one nodule to it and these apparently were encapsulated. On dividing one of these nodules it was found that the growth was very firm, having the pearly gray appearance of a sarcoma, and on microscopic examination proved to be a fibrosarcoma. Dr. Bell of the Department of Pathology saw the specimen today and reported the diagnosis as a sarcoma of the less malignant type—a fibrosarcoma. He does not advise amputation but to remove all of the tissues more widely from the hand in the region of the wound, which will be done at once.

X-rays show the tumor visible in anteroposterior and lateral views involving the soft parts only. The outline of the tumor can be seen very plainly especially in the anteroposterior view. There is no involvement of bony tissue.

Dr. R. C. Webb in referring to the first case said that the Steinman pin, which, however, should be called Codivilla pin, occasionally sets up a low grade osteomyelitis resulting in a chronic sinus after extension is removed.

Dr. A. A. Zierold stated he recalled having a case at the University Hospital a year ago somewhat like the second case of Dr. Maxeiner. The mass was just below the lateral condyle of the humerus and the question arose whether there was a cystic or tuberculous process present. It was incised and the tumor tissue was very similar to what Dr. Maxeiner describes. He attempted to denude the bone without invading the joint. It was not a complete removal. Dr. James Johnson has seen the case more recently and reoperated. This will give some idea of the time of recurrence in sarcomata of this type.

Dr. James A. Johnson said the case that Dr. Zierold referred to with fibrosarcoma of the arm was one of their students at the Medical School. He had a recurrence at the site of the original tumor in less than a year. He therefore made a wide excision, including the capsule of the radial joint, also a large portion of muscle around the growth. After this excision 50 milligrams of radium was placed in the wound to make certain of a complete destruction of all the tumor tissue. Not infrequently fibrosarcomata occur after injury. Dr. Johnson recalled four cases that

he removed from fingers at the University Dispensary. These were all secondary to incision injuries to the fingers. Two of these cases had a local recurrence and had to be reoperated.

Dr. Arthur F. Bratrud mentioned another case of a similar growth to that of Dr. Maxeiner. Dr. Robertson examined the tissue and made a diagnosis of angiosarcoma, stating that mitosis was marked. Different surgeons did not agree as to what was most advisable. However, all agreed that amputation should be performed at any point from the wrist to the shoulder. Dr. Robertson's opinion as to whether this was granulation tissue or a malignant condition could be questioned. Upon his advice wide local excision was performed. This was on November 7th, 1920, and to date there is no sign of extension or recurrence.

SEVERAL PROPOSITIONS, BOTH GENERAL AND SPECIAL, FOR THE CONSIDERATION AND CARE OF CLEFT LIP AND PALATE

Dr. Harry P. Ritchie gave an exceedingly interesting talk with lantern slide demonstrations on the above title. He said:

"I have written of and discussed this subject several times and I fear that I have little new upon it, although each time at the opportunity for talking I find that I meet with a great deal of interest. In my experience this is a subject that is not only of a special nature but must interest everyone. I feel the need of consultation with orthopedic men, surely with the medical men and also with nose and throat men, and particularly of the pediatricians.

We used to feel that this subject interested only a very few and yet I find operations being done by oral surgeons, nose and throat men and those working in several associated fields; so I have almost decided that it is everything except a surgical problem.

In the study of this condition I have come to the conclusion that our procedures must be founded upon general surgical principles and that there must be a review of the whole subject in order to clear up many very greatly debated problems which have been discussed in the literature and I believe add confusion to the proper procedures.

The recent publication of the article by Dr. John Staige Davis and myself in the *Journal of the American Medical Association*, deals with a part of the subject that has not been discussed in the literature and yet which seems to me to be the most important thing. This article has the purpose of developing a rational terminology. It also purports to make a classification for the case as a whole whatever the anatomical combination is and affords the opportunity for an exact record of the original condition. These are the things that those of us that are interested particularly in the subject must agree upon in order that we may definitely understand each other in our discussions of the proper technique for the repair of a given case.

My criticism has been that the tendency of the literature has been towards a routine treatment for every case, which seems to me would be an impossible thing because we have such a multiplicity and variety of anatomical combinations. By this reason it would seem impossible to develop a routine [method of] repair which would meet all situations, no matter what the disposition of the tissue. If we are to

advance in the consideration and care of these cases it must be along the lines of selected measures and the determination of those results to any given case, and therefore it is of the greatest importance that we have the exact original record of the case. Whether our program as now published is to meet this or is to be substituted by something better, it is nevertheless, as I have said before, the most important feature of our work in the repair of this deformity.

Over the many years of the literature there has accumulated such a mass of technical details—choice of sutures, angles of incisions and reposition of tissue—that one is absolutely lost in the selection of them in a given case, so that our effort and study must be along the lines of selection of the many methods which will fit in with our ideas of general surgical principles.

The question of "time of operation" is a very important one and we must have some reasonable basis to make a statement. For about 100 years we have been talking about the complete palate and I believe that it is necessary to separate this complete palate and indicate the different structures of which it is composed and bring out the fact that it is the cleft of the alveolar process that is the principal thing in our selection of time of operation. If the process is normally closed in a new baby and there is a lip cleft present, we can do that case with equal facility at any time that we may select. The operation on the lip requires the mobilization of tissues which are elastic and movable and the time element is in no way important. If the baby is born with a normal process and a cleft palate, then according to our present ideas operation should not be attempted until the baby is well established for the reason that operation upon the palate carries with it a risk of greater blood loss, more surgical shock and more danger of post-operative complications especially respiratory in nature. It is not a wise procedure to attempt an operation of either the soft or hard palate until the baby is surely able to stand a very considerable degree of traumatism, so that now we will suggest that this cleft be repaired when the baby is a year old or fourteen months old, even later if there is a reason why it should be postponed. But if the baby is born with a cleft in the alveolar process, then it is necessary, as we have proven again and again, that this cleft in the alveolar process be repaired as early as possible compatible with the condition of the child and at any rate before the baby is three months old. We have here in the closure of the cleft of the alveolar process a surgical proposition which is not present in the repair of any of the other clefts. Here are bones separated which must be moved to close that cleft. If done early these bones are soft and pliable and will yield to pressure oftentimes of very little degree and the operations when undertaken at this stage are universally successful whatever method of closure we may use, whether by the use of wires or by closure of the lip first. But if the operation on these structures is delayed beyond three months, the bone becomes fixed and set, and when closure is attempted it is accomplished with very great difficulty owing to the fact that the bones have lost their pliability. This leads to a conclusion that is the most important statement upon this feature of time of operation; if the baby is born with a normal

process, no matter what the deformity in front or back, we can take our time and consult our convenience, but if the process is cleft, then the baby must be attended to and something done to close the process at the earliest possible moment. The lip cleft and the palate cleft which are usually associated with the cleft alveolar process then can be operated at any time the judgment of the operator sees fit.

In the literature there is a debate as to the sequence of operation, whether the palate or the lip shall be done first. If "palate first" means the raising up of the mucoperiosteal flaps of the hard palate and approximation of the tissues of the soft palate, then I directly and positively object. If "palate first" means "process first," then I emphatically say yes, because no wide cleft of the process will permit a satisfactory repair of the lip or closure of palate. In the study of the tissues I believe that both procedures, lip first or process first, are perfectly proper and that the selection of the procedure is materially influenced by the degree of the process cleft and the age of the baby, and that is one of the reasons that we are trying in our classification to make actual measurements of the case and record it in its original condition to see if it is possible to work out some schemes which may have a general application in the selection of procedure between these two plans. I am continually seeing the process closed by doing the lip first. I have also seen clefts of such a degree that it would be absurd from a surgical and technical standpoint to expect closure of that process cleft by doing a lip first, all of which leads to a more intimate study of the whole subject which presents so many interesting problems."

Dr. S. R. Maxeiner in discussing Dr. Ritchie's talk said:

"I do not think Dr. Ritchie's paper should pass without some sort of a discussion. I know that most of us feel that we are not capable of doing so. I have been to Chicago and watched Dr. Brophy work and it is very wonderful to watch a man of his age do the delicate work he does with such beautiful results. Dr. Brophy I believe reports the highest number of cleft palate operations on babies under six months with no mortality.—I think something like 211 cases—and Dr. Brophy still uses chloroform anesthesia. He is, I believe, deserving of a great deal more credit than is given him in the texts. I reviewed the work of Blair in which he only mentioned the work of Brophy. When in London I visited Lane and Berry and I never saw two men more opposed to one another. Each seems to think the other is all wrong. They are absolutely open in their discussions of one another, probably due to the fact that they both are in the same city and thrown together. I saw some of Berry's cases and his results are very beautiful. One thing I was impressed with and that was that Berry did not seem to be discouraged because he happened to get a hole in the palate after the first closure. If we got some of the holes Dr. Berry closed later we were very much discouraged about it. Major Mullally with whom I served in France was a protege of Lane and a very ardent supporter. They had Brophy in London and asked him to do his famous wiring operation but the baby died and that discouraged the wire operation.

"Unquestionably we must select the proper procedure, as Dr. Ritchie says, for each case. Why should we use the

same technique for cleft palates of different types or lips of different types?"

WHERE WE ARE WRONG

In every fad and cult that holds the public imagination for a time, there is at least a spark of truth—if only a psychologic one—to keep the flames of credulity alive. In the pseudomedical sects, no less than elsewhere, is this so; and it is by the disregard of this fundamental principle that the profession paves the way for chicane's advance.

To every physician there comes at times the patient who presents a definite set of symptoms that are unaccounted for by any pathological lesion, a case which is not an actual medical or surgical one—or truly neurological, either. When the average doctor meets these cases, he dismisses them with a "nothing wrong"—and the disgruntled patient goes away, to become a follower of one or another of the antimedical bodies, *and there to find relief.*

Why should not the qualified medical man handle these cases? Why not extract the grain of truth or psychologic fact that accounts for the seeming success of fad cures, and apply it himself, in combination with his scientific knowledge? It is true that there is no harm in having a patient with no actual lesion treated by the irregular cults. But once he finds a seeming cure there for his purely symptomatic illness, he takes his real and serious maladies to the same healers—and there the danger for him lies.

Every patient who leaves a doctor dissatisfied, with his symptoms unrelieved, and then finds a cure outside the profession, strengthens the insidious hold of the cults; and it is only because of our failure to appreciate the psychologic factors that the quacks and faddists grasp that we fail where they succeed.

Needless to say, we are not recommending the mulcting of healthy patients by unnecessary treatment; but we do believe that a keener psychologic appreciation would help the particular patient who finds his cure with the "irregulars," and undermine the cult. It is our own fault, among others, if charlatany exists.—*New York Medical Week.*

A UNIQUE REMINDER

Blessed is the man who has an inventive turn of mind and thrice blessed is he when he uses it to the advantage of his fellows. Occasionally a secretary of a county medical society develops a novel idea and applies it for increasing and for holding the interest of its members in the work of the society. Dr. Frederick A. Baker, Secretary of the Oakland (Michigan) County Medical Society, has the program for each of six meetings printed on an ordinary red shipping tag, provided with a string for tying the tag to the telephone in the office of each society member. None but an extremely unobservant man can fail to be reminded many times in each day that he is a member of his county society when a red tag bearing witness to that effect hangs glaringly from his telephone. No member of the Oakland County Medical Society is ever without an easily reached source of information as to what the program for the next meeting is to be. Dr. Baker's tag reminder is unique and the idea is *ova* trying out by county secretaries generally.—*A. M. A. Bulletin.*

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ORIGINAL ARTICLES

LUNG ABSCESS*

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It seems to me fitting, before a gathering of this kind, to discuss lung abscess from other standpoints than purely that of its surgical treatment. Those of you who have been interested in the subject have, I am sure, been impressed during the past six to eight years with the increasing number of cases which have come under your own observation and have noted the great number of cases reported in the literature. The late John B. Murphy¹ was able to collect only seventy-two cases from all causes reported in the twenty years between 1878-1897. In the past five or six years a far greater number have been reported following tonsillectomy alone. But while tonsillectomy has in recent years outstripped every other etiological factor in the causation of this disease—and therefore requires special comment—there are other etiological factors of the same nature which require emphasis; and I wish today to discuss lung abscess from the standpoint of preventive surgery and medicine as well as from the standpoint of its surgical treatment. My remarks are based upon an analysis of sixty-two cases occurring in the service of Dr. Halsted and from a study of the literature.

From the standpoint of etiology, lung abscesses may be divided into a number of groups:

1. *Lung Abscesses Secondary to Tonsillectomy.* Before 1912 almost unknown as a cause of lung abscess, tonsillectomy has since that time come into prominence as the most common cause of this disease. It is not my purpose to discuss whether or not tonsillectomy is too indiscriminately performed, or done by improper methods or by inexperienced specialists. Yet I cannot refrain from some comments which I think may be appropriate.

That it is a fact that tonsillectomy is at present the most common cause of lung abscess can be established by anyone who will read the literature on the subject since 1912. In every large and small series of *recently* reported cases it stands out as the foremost cause of this disease and the number of cases reported is rather alarming. Having established this fact we should like to know in what way or ways this popular operation may cause lung abscess. We find a great difference in opinion expressed in the literature. Most general surgeons who have expressed themselves take a simple view of the matter—that lung abscess following tonsillectomy is in the majority of instances due to the aspiration during or after operation of infected blood or particles of tonsils. The majority of nose and throat specialists, while admitting this cause as important, rather incline to believe that the more frequent cause is by embolism and infarction—the septic material about the tonsil entering the blood or lymph channels and being carried thence to the lung. These are the two chief sources of pulmonary infection as expressed in the literature, but other causes have been enumerated, most important of which is the kind and method of anesthesia—whether local or general, and if the latter, whether motor driven or not. In an attempt to correlate the views expressed in the literature I may state certain facts with which everyone is in more or less agreement.

1. Lung abscess follows tonsillectomy and the operation is responsible for the disease.

2. The vast proportion of lung abscesses follow tonsillectomy *done under general anesthesia.* In Fisher and Cohen's² collection of seventy-six cases of lung abscess following tonsillectomy, seventy-four had a general anesthetic.

3. Lung abscess does, however, follow tonsillectomy done under local anesthesia but the proportion of cases is small.

4. Lung abscess follows tonsillectomy even when, according to the author's statement, the operation is done with every possible precaution.

*Paper delivered before the Southern Minnesota Medical Society, Rochester, Minn., June 19, 1922.

It would appear from these statements that aspiration of infected material occurring during general anesthesia is the most frequent cause of lung abscess; the supporters of the embolic theory, however, state that local anesthesia lowers the incidence of lung abscess by contracting the vessels about the tonsil and preventing the entrance of infected emboli into the lumina of the vessels. This particular question, however, is largely an academic one and I shall not further discuss it.

The important matter for us is that we have here the most frequent etiological factor at the present time in the causation of lung abscess; and the problem of eliminating this etiological factor is purely a problem in preventive surgery. With the known facts at our disposal we might say that we could very largely solve the problem by agreeing that tonsillectomy should be done only under local anesthesia. Such an agreement if carried out would eliminate perhaps the larger number of lung abscesses but it would not eliminate them all; for there remain the large number of children and the occasional adult who require general anesthesia. Moreover we would be prone to lay too great stress upon general anesthesia as the cause of lung abscess, which might blind us perhaps to more important factors. Crowe³ and his associates in Baltimore have, since 1911, performed 3,000 tonsillectomies under general anesthesia. The cases have been followed and there has not developed a single instance of lung abscess; and indeed the only pulmonary complications which have followed in the entire series are two cases of presumed broncho-pneumonia, both of which recovered. This series together with the experience of the Mayo Clinic⁴ (16,275 tonsillectomies in ten years with no known abscess) demonstrates that tonsillectomy under general anesthesia can be made as safe as by any method. The root of the matter is that it is the surgeon and his methods who is very largely responsible for lung abscesses; and our best method of preventing them is to encourage—and I was going to say insist that—the men who go into nose and throat work get an adequate training in general surgery so that they may be familiar with surgical pathology, surgical technique and the control of hemorrhage, and possess good surgical judgment.

2. *Lung Abscesses Secondary to the Aspiration of Other Foreign Bodies.* An etiological factor not of so great importance as the preceding, yet a

perusal of the literature shows a fairly large number of abscesses due to the aspiration of teeth, kernels of grain and other foreign bodies. In our series it was the cause of two abscesses; in Forbes's⁵ series, of one; in Whittemore's⁶ series of thirty-two cases, of three; in Wessler and Schwartz's⁷ series of fifteen cases, of three; and in Hedblom's⁸ series of fifty-six cases, of six. Tuffier⁹ found this to be the etiological factor in 11 per cent of his collected cases. A fair estimate is I think that 10 per cent of the abscesses reported have been due to the aspiration of foreign bodies. Here then is another field for preventive medicine and surgery. Naturally our preventive measures should take two directions: first and most important, the prevention of the aspiration of foreign bodies so far as this can be prevented, and, second, the prompt removal of foreign bodies after they have been aspirated into the bronchi. We lack at the present time a sufficient number of men trained in the use of the bronchoscope; yet there are medical centers which possess men with surprising skill; and it is our duty to send these patients as promptly as possible to these medical centers.

3. *Lung Abscesses Secondary to Infectious Processes Elsewhere.* I refer here to the lung abscesses secondary to liver abscess, to appendicitis with peritonitis, and to other acute or chronic infections within the abdomen; to mastoiditis; to empyema and other septic conditions. A review of the literature shows a considerable number of lung abscesses due to these conditions. In our own series of sixty-two cases, seven cases followed acute abdominal conditions, including liver abscesses, appendicitis and peritonitis; two followed acute mastoiditis; three septicemia secondary to acute osteomyelitis; and fifteen were associated with empyema. In Hartwell's¹⁰ series of 143 cases, at least forty followed some infectious process elsewhere than in the lungs and five followed acute mastoiditis; in Hedblom's⁸ series of fifty-six cases one followed liver abscess, one subphrenic abscess, and four were associated with empyema. It is apparent therefore that a considerable number of abscesses are secondary to infections elsewhere and chiefly to abdominal infections. In cases associated with empyema it is indeed difficult to say whether lung abscess is secondary to empyema or whether it is primary and the empyema secondary. It seems clearly established, however, that a certain number of abscesses are primary, the empyema second-

ary; but it would also appear that a certain though unknown number are secondary to empyema and due to the infection of the lung tissue from the pus which perforates into the lung from the pleura. In this miscellaneous group of cases due to infections elsewhere we again have an opportunity for preventive medicine and surgery, and our preventive measures must consist in the early diagnosis and prompt treatment of the acute abdominal and other infections which antedate lung abscess.

4. *Lung Abscesses Secondary to Surgical Operations* (exclusive of those on nose and throat).—I refer, under this heading, to the lung abscesses which follow what we call aseptic operations—such operations as gastroenterostomy and gastric resection, cholecystectomy, gynecological operations, and indeed all procedures—excepting the acute infectious processes—within the abdomen; operations upon the breast and thyroid; hernia and peripheral operations. Postoperative lung abscess following these procedures is not an infrequent complication. In our own series fourteen of the sixty-two lung abscesses followed such operations; in Hedblom's⁸ series nineteen of his eighty cases were of this nature. I need not go on with the citation of cases from the literature. Those of you who are interested in surgery are aware that postoperative lung abscesses—exclusive of those due to tonsillectomy and acute infectious processes—are not a rarity in any large hospital service and are complications to be justly feared. The mechanism of their production is varied. Some are undoubtedly due to aspiration of infectious material—saliva or vomitus—into the bronchi, some to septic embolism and infarction. The basic lesion is either a broncho-pneumonia or infarct—lesions which subsequently undergo abscess formation. It is within our power, I believe, to prevent some of these abscesses; and by greater care in the administration of anesthesia, by a more careful handling of tissues, by greater attention to postoperative treatment—in a word by a greater attention to detail in the performance of our commoner surgical operations.

5. I will pass over the relatively few cases of abscess due to malignant disease, stricture and other conditions of the esophagus, and of malignant disease of the bronchial tree and lung. The conditions themselves are very fatal; the diagnosis oftentimes is made late. Yet even here attempts should be made to prevent the formation of lung abscesses,

especially in the benign lesions of the esophagus, such as strictures. In our own series two fatal cases resulted from misapplied attempts at dilatation.

6. I come finally to lung abscess secondary to pneumonia—broncho-pneumonia or lobar pneumonia of the ordinary type—either primary or preceded by some infectious disease, as scarlet fever, diphtheria and so on. In all earlier statistics pneumonia is given as the most frequent cause of lung abscess. In Murphy's¹ series it is given first place in the causation of this disease; in Hartwell's¹⁰ series it is the greatest single cause; in Hedblom's⁸ it stands first and in our own is the greatest single factor. Yet all these series of cases cover some years in a hospital's experience and when we consider the literature of recent years we realize that pneumonia as a primary disease is no longer the chief cause of lung abscess. Yet it is a disease which probably will remain with us and will continue to be a factor in the causation of lung abscess. What preventive measures may be taken to lower the incidence of lung abscess in this disease I must leave to our colleagues, the internists, to decide.

Viewed from the aspect of etiology therefore lung abscess is a complication, the elimination of which is largely a problem of preventive medicine and surgery. The necessary preventive measures are not clear cut and easily defined; they involve early diagnosis and treatment of various conditions, better training of surgeons, meticulous care in operative and postoperative treatment and good medical and surgical judgment. Yet if we should give more serious thought to the prevention of lung abscess, we would I think note a gradual diminution in their number.

Pathology.—There is only one point in the pathology of lung abscess to which I wish to refer. Broadly classified there are two varieties—the single and the multiple abscesses. We, as surgeons, are prone to think of lung abscesses as single abscesses for it is this variety with which we come in contact. We are apt to forget the multiple abscesses which form no small proportion of the whole and which are so commonly recognized only at the autopsy table. In our own series of sixty-two cases, fourteen passed through our hands unrecognized during life and at the autopsy table showed multiple lung abscesses. Five additional cases in which a diagnosis was made and opera-

tion performed died and at autopsy showed multiple lung abscesses, only one of which had been drained. Norris and Landis¹¹ saw thirty cases of single lung abscess but found thirty-three of multiple lung abscesses in their autopsy records. Hartwell¹⁰ in the Bellevue Hospital records found 143 cases, fifty of which should have been recognized clinically; the larger proportion, however, were presumably small multiple abscesses. In Hedblom's⁸ eighty cases, twenty-four were recognized only at autopsy. We see, therefore, that multiple lung abscesses vie in number with single; they defeat in the great proportion of cases our best efforts at diagnosis; they resist our medical and surgical efforts at treatment; and they contribute as largely, if not more largely, to the mortality in lung abscess. They are especially prone to occur following infectious processes such as intra-abdominal infections, pneumonia, mastoiditis and septicemia from whatever cause. Our only method of coping with them at the present time is by prevention.

Diagnosis.—We have undoubtedly made advances not only in the diagnosis of lung abscess but in the exact localization of the disease. Granting that we still rely on an accurate history, a careful physical examination, on the cough and the character of the sputum, we must admit the enormous help which the x-ray, and especially the stereoscopic x-ray, plates have contributed to diagnosis and localization. Certain experts combining an anatomical knowledge with x-ray studies are able with almost uncanny accuracy to localize an abscess by its relation to known branches of the bronchial tree. Others more recently have studied the problem with the bronchoscope and are not only able to localize the disease from the escape of pus into the bronchi, but claim to be able to differentiate it from other conditions. Still others have combined the use of the bronchoscope with stereoroentgenograms and by injecting bismuth paste or some other opaque substance have accurately localized the disease. We can say that we can now in the large proportion of cases not only make a diagnosis of single lung abscess but accurately localize it within the lung. But there still remain a certain number of cases in which the differential diagnosis between lung abscess and tuberculosis, bronchiectasis and localized interlobar empyema is very difficult. Within the week I operated upon a patient in whom a diagnosis of lung abscess was pos-

itively made by an expert clinician whose ability to read x-ray plates is amazing; and I found an interlobar empyema. Practically, from a surgical viewpoint the failure to differentiate between lung abscess and localized empyema is not serious, for both conditions require drainage. But to operate upon bronchiectasis or tuberculosis under the supposition that we are dealing with lung abscess is not only embarrassing but may be productive of harm to the patient. We still have something to do therefore in the diagnosis of single lung abscess; and very much to do in the diagnosis of multiple lung abscess.

Treatment.—In the treatment of lung abscess we have also made very definite advances and I wish to briefly outline the present status in our treatment of this disease.

1. It is recognized that lung abscess may undergo a spontaneous cure, especially when some form of postural treatment such as Garvin's method is consistently used. It is the acute abscesses with free drainage into a bronchus which are spontaneously cured.* From the available records in the literature we cannot expect more than 6 to 10 per cent of all cases to get well without other forms of treatment, although in children according to Wesler and Schwartz⁷ the percentage of spontaneous cures is higher (33 per cent in thirty cases). Among other dangers to the patient in expectant treatment is the danger of allowing an acute abscess to become a chronic abscess—a condition which is far more difficult to cure by any method; and I believe it unfair to the patient to treat a lung abscess expectantly for longer than six weeks to two months.

2. *Artificial Pneumothorax.*—This method of treating lung abscesses was, so far as I can determine, first seriously employed by Jacobaeus¹² in Sweden in three cases. Since that time it has been used by a number of authors with varying results. The most favorable results have been obtained by Tewkesbury,¹³ who in 1919 reported fourteen cases treated by this method, of which eleven, or 73 per cent, were cured, and three, or 27 per cent, died.

*We have recently had our first opportunity of observing the spontaneous cure of a definite well-circumscribed acute abscess. The patient presented himself with cough and expectoration and physical examination showed an area of consolidation with signs of cavitation in the upper lobe. X-ray plates showed a definite well-circumscribed abscess. Under postural treatment his symptoms improved and successive x-ray plates showed a diminution in the size of the abscess. At the present time the patient is free from symptoms and it is impossible to tell from the present x-ray plates of his chest which lung had previously been involved.

Glendening¹⁴ in 1922 reports the same author as having had nineteen cases, of which sixteen were cured and three died. In our own experience the method was tried in five cases; two are well, three were improved but have not recently been heard from. The method, however, has not been uniformly successful and there are many unfavorable reports in the literature both here and abroad. The objections to the method are, first, its inapplicability in a rather large number of cases due to adhesions between the parietal and visceral pleuræ, and, second, its almost certain failure in the chronic rigid-walled abscesses. Yet I believe artificial pneumothorax has a certain field of usefulness. It is applicable in the treatment of the acute abscess in which there are no adhesions between the visceral and parietal pleuræ, with the reservation that it be not continued too long if definite improvement does not follow. As a diagnostic measure it is of the greatest help; combined with the use of the x-ray it tells us whether or not adhesions are present so that we may know before operation whether a one stage or two stage operation will have to be performed; in case adhesions are present it tells us exactly where they are so that we can approach the abscess intelligently.

3. *Surgical Drainage.*—This still remains from a general viewpoint the standard and best form of treatment for lung abscess. As our diagnostic methods have become more accurate, as surgeons have taken a particular interest in this field of surgery, our results in the treatment of single lung abscess have improved. The operation as you are aware is done in one or two stages depending upon the presence or absence of adhesions to the parietal pleura; and under general or local anesthesia, preferably the latter. Drainage of the lung abscess is the essential feature of the operation. The results depend upon whether the abscesses are single or multiple and whether they are acute or chronic. The single abscess is the ideal abscess for surgical treatment, and, better still, the single abscess in the acute stage. In our personal series if we eliminate the multiple abscesses and confine ourselves to the single abscesses we have twenty-four cases subjected to drainage operations in one or two stages with one death, a mortality of 4.2 per cent. Of the twenty-three patients who recovered, sixteen are entirely well one or more years, five are not well in the sense that they still have some cough and expectoration and two left

the hospital greatly improved but have not since been heard from. When we study the cases which are not entirely well we find that in every instance the condition was a chronic lung abscess of from one to eight years duration. Other statistics in general bear out our experience. Lord¹⁵ reports six deaths in sixty-two cases, a mortality of 9 per cent with 54 per cent complete or partial cures; Whittemore⁶ in his second series of seventeen cases reports a 5.8 per cent mortality but the proportion of cures is not definitely stated; Hedblom⁸ reports 66.6 per cent of acute abscesses cured or improved at the Mayo Clinic and 41.1 per cent of chronic abscesses cured or improved. It is this contrast between the percentage of cures in acute and chronic abscesses as brought out by Hedblom to which I wish to call your attention; for our own experience has also been that the acute abscesses are cured by operation, while the chronic abscesses surrounded by rigid, fibrous walls are difficult to cure by operation—and indeed by any method short of lobectomy. We have here, I think, a clear indication of what our attitude toward lung abscesses should be, namely to institute active surgical treatment before they have become chronic. Granting accurate localization, surgical treatment in the acute stage of abscesses will from my own experience give 75 to 80 per cent cures with a mortality of 5 to 10 per cent.

4. *Thoracoplastic Procedures.*—The failure to cure some of the chronic lung abscesses by simple drainage and the desire to treat by compression those cases which because of adhesions are not suitable for artificial pneumothorax has led to the use of thoracoplastic operations in certain cases. Various procedures may be considered under this heading and, broadly speaking, they may be divided into two groups: (a) procedures the aim of which is to collapse and obliterate the abscess cavity by compression of the lung and (b) procedures the purpose of which is to exteriorize the abscess cavity and cover its presenting surface with skin flaps or grafts. To the former belong the more or less radical rib resections of Friederich, Sauerbruch and Willms and the procedure of Tuffier (stripping the parietal pleura over the abscess and producing local compression by inserting between it and the thoracic wall a mass of fat or other tissue); to the latter, such operations as, for example, described by Emil Beck¹⁶ (resection of as many ribs as necessary to expose the abscess; removal of the pre-

senting wall of the abscess and insertion into the abscess cavity of skin flaps). Personally I have had no experience with either group of procedures and reports which might give us an idea of their value are meager. With regard to the first group Hedblom⁸ states that in cases of chronic abscesses with rigid walls, collapse of the abscess may be obtained by rib resection; which I had been previously inclined to doubt in view of the known experience with rigid-walled tuberculous abscesses. Tuffier reports two cases cured by his method. The second group, such as the operation described by Beck, would appear to me the more rational providing the abscess is superficial enough to lend itself to this form of treatment, and Beck reports some very successful cases. The chronic rigid-walled *central* abscess may, because of its position, be impossible to treat by this method and be wholly uninfluenced by the compression obtained by rib resection.

5. *Bronchoscopic Irrigation.*—In recent years attempts to cure or relieve the symptoms of lung abscesses have been made by direct irrigation of or instillation into the abscess cavity through the bronchoscope. Kully¹⁷ has reported twenty-nine cases of chronic pulmonary suppuration treated by this method with four cured, nineteen improved, three not improved and three dead. Seventy-nine per cent of the cases according to this author have been kept alive and relieved of the odor and other discomforts of the disease. Imperatori¹⁸ after an experience with seven cases states that as a palliative measure it has a certain value but cannot be expected to cure the disease. Yankauer¹⁹ states that in fifteen otherwise hopeless cases he has cured three, or 20 per cent. It would appear from the available records that this is a method which offers something in a palliative way in cases of chronic abscess but as a curative method has little to offer.

6. *Lobectomy.*—I refer lastly to lobectomy as a treatment for lung abscess. At the present stage in the development of thoracic surgery it should be considered only in those cases of chronic abscess which have resisted other methods of cure. The mortality is still very high—over 50 per cent—and the patients who submit themselves to this major operation should understand its dangers and its complications should they recover. A far better method at the present time of treating chronic lung abscess is to prevent its occurrence.

Let me conclude my remarks upon lung abscess

with a summary of our personal experience with this disease.

1. Of sixty-two cases of lung abscess in our surgical records fourteen were unrecognized during life. Autopsies in these fourteen cases showed in every instance multiple small lung abscesses scattered through the lungs, conditions which could not have been satisfactorily treated by surgery.

2. In the remaining forty-eight cases lung abscesses were recognized. In these the abscess or abscesses followed pneumonia in twenty-seven cases; they were complications following some surgical operation in eleven cases; followed acute abdominal infections in five cases; and were complications following a miscellaneous group of conditions in five cases. The abscesses were associated with empyema in twelve cases; were not so associated in thirty-six cases.

3. The treatment of these forty-eight cases consisted of:

(a) Drainage in one or two stages in thirty-six cases.

(b) Drainage followed by lobectomy in two cases.

(c) Exploratory thoracotomy followed by collapse therapy in five cases.

(d) Postural treatment (Garvin's method) in three cases.

(e) No treatment in two cases.

Forty-three patients therefore were subjected to forty-five operations. Following operation there were thirteen deaths, an operative mortality of 28.8 per cent. Eleven deaths followed drainage operations and autopsies showed:

(a) In six cases there were multiple abscesses only one of which had been drained at operation.

(b) In one case there was a consolidation with softening and abscess formation involving the entire lung.

(c) In one case there was an acute spreading gangrene involving the entire lung.

(d) In one case there was an extensive bronchopneumonia in addition to the abscess.

(e) In two cases there was an extensive inoperable carcinoma of the esophagus with extension into and with abscess formation of the lung.

Two deaths followed lobectomy performed some months after a drainage operation. Autopsies showed that one death was due to an extensive broncho-pneumonia and the other to a pleural infection.

4. The end results in the thirty-five patients who recovered have not yet been completely studied; at the present time however they are as follows:

(a) Of the twenty-five cases which recovered following drainage operations sixteen are well from one to ten years, five are not entirely well, four have not been heard from.

(b) Of the five cases which recovered following exploratory thoracotomy plus collapse by artificial pneumothorax, two are well from one to ten years, three have not yet been heard from.

(c) Of the three cases treated by postural methods, one is not entirely well, two have not been heard from.

(d) Of the two cases who refused operation or other treatment neither has been heard from.

Such then has been our experience with lung abscess as it has occurred in a general service. There has been no attempt to eliminate any cases nor to gloss over our results. Our experience simply demonstrates that lung abscess as seen in a general service occurs as a complication of many conditions and presents itself in a variety of forms. As appears from our records it may be overshadowed by other conditions and, as in fourteen of our cases, be discovered in the autopsy room, and present itself in multiple form quite unfavorable from the standpoint of surgical treatment. It may be recognizable but occur in multiple form so as to defeat our surgical efforts, as in six of our cases. It may be a complication of a hopeless condition, as in our two cases of carcinoma of the esophagus in which the only justification for surgical treatment was the hope of relieving the patient of distressing cough, foul sputum and sepsis. Undoubtedly surgery at the present time achieves good results only in those single well-circumscribed abscesses in which the condition of which they are a complication has disappeared. If we consider only these then our results are vastly improved. In our own series we have twenty-nine such cases and of these twenty-four were treated by surgical drainage and five by exploratory thoracotomy followed by artificial pneumothorax. Only one death occurred and of those which recovered eighteen are well, five are not well and six have not been heard from. Considering the various aspects of the subject which I have tried to bring before you it seems clear that two serious efforts should be made at the present time: first, the effort to prevent lung abscess by measures

which the etiology of the disease as I have outlined it would indicate, and, second, the effort to prevent the development of chronic lung abscess by instituting early active treatment of the acute abscess.

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DIAPHRAGMATIC HERNIA*

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In the past diaphragmatic hernia has rarely been diagnosed before operation. The majority of the cases have been disclosed at autopsies. Some of them have been found in the course of an operation for other supposed conditions. During the last ten years, with the use of the x-ray, occasional cases here and there have been made out before operation, and they are becoming less uncommon. The x-ray is a great aid. With it one should be able to diagnose nearly every case. However, the attention of the diagnostician must be caught by some feature in each case which calls for roentgen examination, or it may not be used and many cases will still be missed. The clinical diagnosis is no clearer than it was before.

The comparatively large number of traumatic

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cases which occurred during the war, and the gradually increasing number of cases in which a definite diagnosis has been made with the aid of the x-ray, have led to some excellent papers during recent years. They cover the subject of diaphragmatic hernia so thoroughly and so well that it is unnecessary for me to go fully into all phases of the subject. This leaves me free to present my cases and to discuss some of the questions which may be of special interest.

Case 1. J. K., aged 30, broncho rider, Montana.

Family history: Negative.

Past history: Pertussis at 9; high-explosive wound left thigh, fleshy parts, October, 1918; high-explosive fragment removed the same day; wound healed.

Present complaint: (1) Stomach trouble. (2) General weakness.

Present illness: No stomach trouble prior to February, 1919; acute appendicitis with abscess operated on in February, 1919. Patient was in bed until June, and the wound continued to drain pus until July, 1919. During this time he was much troubled with gas in the stomach and bowels. Caught cold in March, 1919, and had a good deal of cough, spat up as much as three or four cupfuls during the day, but only one or two teaspoonfuls at a time.

At this time he had much pain in the left chest. In April he began to be better, but continued to cough and expectorate until September, 1919. Previous to the operation he weighed about 160 pounds, but after it he lost so that in July, 1919, he weighed only 124 pounds. After this he gradually gained in weight and strength. In October, 1919, he was operated on for a post-operative hernia, following the appendectomy.

Following this he felt fairly well, but was still troubled with a good deal of fullness and distress after meals until February, 1920, when the trouble became aggravated. At this time he noticed pain in the epigastrium, left lower chest and left shoulder. There has been little change in the character of this pain since that time.

The pain usually starts first in the left shoulder and in the epigastrium. Distress comes usually almost immediately after eating. Liquids often cause much more trouble than solids. He says that when the stomach is bad he has much pain in the lower left chest. When there is much trouble, or when he gets to vomiting, his heart pounds a great deal. He feels best lying on his left side with the knees moderately drawn up. There is definite relief on vomiting. He states that he has vomited food eaten thirty-six hours previously. His appetite has been very good since September, 1919; bowels, usually regular; sleeps rather poorly; has been rather nervous since he was taken sick. Weight, on admission to the hospital, on December 7, 1920, 133 pounds; present weight, 160 pounds, January 21, 1921.

Physical examination: Blood pressure, systolic, 100 to 108; diastolic, 84 to 92. Chest, apparently negative, except for tympanitic note over the left lower chest, heard more prominently at one time than another, also some gurgling in the left lower chest. Heart, apparently negative, except that the pulse goes up very easily on exertion. General ex-



Fig. 1. Shows the large portion of the stomach, above the diaphragm, filled with barium.

amination, negative, except that the patient is definitely undernourished. Blood, negative. Wassermann, negative. Urine, negative. Test meal, total quantity, 60 c.c.; free hydrochloric acid, 30; total acidity, 42; trace of occult blood.

X-ray examination of stomach and duodenum: Shows left lower lung field above the level of the diaphragm occupied by an air bag, which immediately gives an impression of a diaphragmatic gastric hernia. Barium fills readily into the lower compartment below the diaphragm. There is an hour-glass constriction at the level of the dome of the diaphragm through which barium passes with moderate difficulty, and then flows in with a level top under a large gas bubble above the dome. The duodenal cap cannot be definitely ascertained, nor can the flow through the duodenum be seen, but the barium again first appears in the upper loop of the jejunum. Below the lower half of the hour-glass of the stomach. Occasional peristaltic waves are noted in the walls of the herniated portion of the stomach. The pyloric antrum and duodenal cap appear to be in the region of the spleen, but above the diaphragm. A six-hour residue is present in the stomach, which presents two fluid levels, one in the upper and one in the lower compartment, indicating an extremely narrow hernial opening. X-ray examinations of colon, negative.

Diagnosis and conclusions: Diaphragmatic hernia of lower half of stomach, including the pylorus and at least a portion of the duodenum.

It is interesting to speculate on the probable etiology of this condition and its possible relation to a penetrating abscess of the lung injuring the diaphragm and this preparing the field for rupture. The most prominent symptoms of which the patient now complains had their beginning, apparently, only in February, 1920, after the chest trouble, which had lasted from March to September, 1919. However, the broncho riding, which he used to do quite constantly, may have started a separation in the diaphragm.

With the first supposition, we should expect many more

adhesions than in a traumatic hernia, which would increase, to a very large extent, the dangers and the difficulties of operation, but, with the broncho as a causal factor, there should be few or no adhesions and the dangers and the difficulties considerably lessened.

Operation, January 26, 1921: Left rectus incision, curving well up into the sternal notch. Fully half of the stomach was found rolled upwards through a transverse slit in the diaphragm. This comprised the pyloric end and part of the adjacent fundus of the stomach, which, in its slow anterior rotation upwards, had dragged the duodenum from its attachments, upwards, through the opening, into the chest cavity, so that practically the entire duodenum, as well as the lower half of the stomach, some of the fundus, and part of the omentum protruded through the hernial opening. The omentum was adherent about the opening, both inside and outside the abdominal cavity, for some distance. All other surfaces were free from adhesions.

After the omentum had been thoroughly loosened, by finger dissection, the portion of the fundus, the pyloric end and practically all of the duodenum were worked downward through the opening with moderate difficulty. The stomach slowly assumed its normal shape and size, without constrictions, though in spots its surface was somewhat roughened where it had been caught by the constriction of the opening.

The slit in the diaphragm extended from near the esophageal opening outwards and a little backwards in the posterior quadrant. This was closed with eight carefully placed chromic gut sutures. The portion of the stomach lying just anterior to this suture line was sewed to the diaphragm for the slight effect it might have against a recurrence of the hernia.

No difficulties were encountered except those incident to the placing of the sutures in the great depth of the field, which was considerable. Only a moderate pneumothorax occurred and was very easily controlled by covering the opening.



Fig. 2. Shows the healed dome of the diaphragm, after operation.



Fig. 3. Shows the recurrent hernia with the large portion of the stomach, above the diaphragm, largely filled with gas but with the barium mixture beginning to push upwards from below the hernial opening. The stomach, below the diaphragm, is largely filled with barium but shows a gas bubble beneath the diaphragm.

May 11, 1921, three months and a half after operation, he reported that he was free from all gastric disturbances, could eat any kind of food without distress, has had no vomiting and no pain in his shoulder.

Of late he has not been able to resist riding his pet broncho. As a result, all of his old symptoms have returned.

There is an area of tympany in the lower left chest. x-ray with barium shows a large air-bubble, above the diaphragm, beginning to fill with barium, pushing up from another air-bubble, partially filled with barium, below the diaphragm.

Diagnosis: Recurrent hernia of the diaphragm, containing a large portion of the stomach.

This man was re-operated upon December 19, 1921, eleven months after the first operation, by the abdominal route. This time the lower portion of the stomach was adherent to the vault of the diaphragm and the upper por-

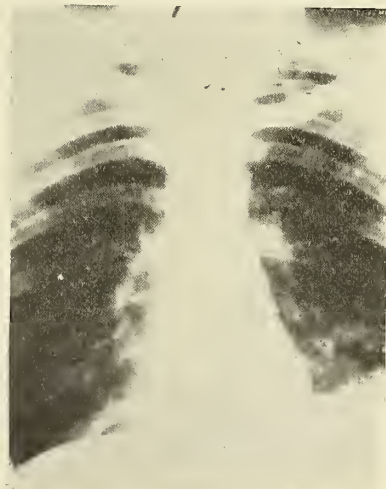


Fig. 4. Taken after the second operation, shows no abdominal viscera in the chest cavity.

tion was adherent throughout its entire surface, that is, to the diaphragm below, and to the lung and pericardium in its remaining surface. This increased the difficulty of the operation considerably but it was accomplished and a satisfactory closure made of the diaphragmatic opening with two good rows of chromic gut sutures.

The convalescence was slow and was prolonged by an evident pneumonia in the base of the lung, to which the stomach had been adherent, and, later, by an attack of jaundice, which cleared up slowly. A recent examination shows the diaphragm intact.

Case 2. States that his present condition started in March, 1919. After this he was in various hospitals for five months, with a diagnosis of bronchitis and tuberculosis. After leaving the hospital he has had pain over both sides of the chest, loss of appetite, insomnia, hemoptysis, weakness, shortness of breath and loss of weight. Since this time he has been a bed patient at home or hospitalized in various hospitals, most of the time. He has had definite tuberculosis.

In all this time, while he was under study and treatment, no diagnosis of his diaphragmatic hernia was made. One month before the present study a diagnosis of the condition was made as an interlobar empyema. The physical findings are such that the diagnosis seems to rest between a pneumothorax or the presence of air-containing organs in the chest. Gurgling can be heard. The original x-ray plates gave an erroneous impression of the conditions within the left chest cavity so that the patient was placed under the fluoroscopic screen, and plates were taken at proper intervals. The two following x-ray pictures clearly show the diaphragmatic hernia.

Gastro-intestinal examination shows the barium meal to travel through the esophagus, below the level of the diaphragm, then to rise up through the diaphragm into the main portion of the stomach, which lies in the left thoracic cavity, rising to the level of the second rib anteriorly, with



Fig. 5. (Dorsal view, left to right.) Shows a large portion of the stomach, some of the ileum and large bowel, above the diaphragm.



Fig. 6. (Dorsal view, left to right.) Shows the entire splenic flexure in the left thoracic cavity. The stomach is empty of barium and does not show.

the patient in supine position, and sinking to the fourth rib with the patient standing. At six hours the stomach is about half filled. At twenty-four hours the barium extends from a portion of the ileum, in the thoracic cavity, downward through the diaphragm to the ileocecal valve, and in the colon back into the thoracic cavity. The splenic flexure lies entirely within the thorax, laterally and posterior to the stomach.

Diagnosis: (1) Diaphragmatic hernia, with stomach, part of the ileum and the splenic flexure in the thorax. (2) Active tuberculosis.

Recommendation: Treatment of the active tuberculosis first, and then a new judgment.

As to the symptoms of diaphragmatic hernia: they will vary greatly according to the size of the hernia, the amount of constriction at the ring, and the organ, or organs, which are involved. Various abdominal viscera have been found, but the stomach and the colon are by far the most common. The symptoms vary from none at all, in some cases, through reflex indigestion, to ulcer of the stomach or duodenum, stenosis at the pylorus, cholecystitis, constipation, or obstruction of the bowels. In some cases pressure against the heart displaces it and may give rise to tachycardia, mediastinal discomfort and dizziness, pressure on the heart and lungs, and to dyspnea. Sometimes the position assumed by the patient influences the symptoms.

The physical signs vary. Sometimes there are none to be found. Tympany, sometimes succussion, may be demonstrated where normal lung resonance should be. Occasionally gurgling may be detected. Sometimes these signs will change with different positions, or at different times. If the x-ray study

is made, the findings will, as a rule, be quite conclusive. The arch of the diaphragm will be clear, often higher than normal, and with abdominal viscera protruding through into the thorax. The hernia will nearly always be found on the left, owing to the protection which the firm body of the liver gives to the right arch of the diaphragm.

In regard to the operation itself, there are two methods of approach. Most of the American and British surgeons show a decided preference for the abdominal route. The approach through the thorax brings one into closer reach of the diaphragm and removes the considerable difficulty encountered in placing the sutures in the great depth of the wound by the abdominal route. American surgeons are loath to produce the pneumothorax which results when the chest is opened, and, if they select this route, they have been inclined to use insufflation anesthesia. However, our war experience with chest surgery has shown that the pneumothorax is of slight importance at the time and disappears rapidly afterwards. In large hernias the collapse of the lung has already taken place, before the operation is begun.

My own feeling is that some cases will be best treated by the abdominal approach, through the right rectus incision down to or below the level of the umbilicus and extending upwards in a slight curve along the margin of the cartilages into the sternal notch, and some best by way of the chest, through a long incision between the ribs, with retractors widely spreading the ribs, which seems to me much better than the resection of long portions of two ribs.

When there are abdominal complications and abdominal adhesions the abdominal route will be chosen. When there are more or less extensive adhesions in the thorax the best approach will be by way of the chest. When both abdominal complications and extensive adhesions in the thorax are present the combined method of approach will sometimes be needed.

DISCUSSION

DR. WARREN A. DENNIS, St. Paul: Dr. Mann asked me to discuss his paper for the reason that he happened to know I have had an experience of this kind.

I think perhaps I can best contribute to this discussion by briefly detailing my own experience. This case occurred about fifteen or eighteen years ago, before the time that any fluoroscopy was done. We had the x-ray and it was used rather indifferently. This young man, 20 years of age, came into town from North Dakota and gave the

following history: A year before, he was driving on a dark night a team of horses and lumber wagon, when he suddenly met another team, and each turned aside to escape a collision, but the tongue of the other wagon struck him in the left side at the margin of the ribs. He was severely injured, was in bed a month, and then got up and seemingly was in good shape. A year later he was riding a pony and got thrown over the pony's head and was brought as soon as possible to St. Paul in a rather serious condition. The picture he presented is one that I shall never forget. He was markedly cyanotic; his pulse was 72; respiration was not hurried nor apparently labored. The abdomen was very markedly retracted, scaphoid, and there was no marked tenderness to be elicited at any place, neither did he complain of pain in any place. He had a sort of anxious expression of the face. He was not vomiting. We looked him over carefully, and I had not the remotest idea what was the matter with him. Under the upper end of the left rectus there was possibly more sensitiveness there than elsewhere. Being satisfied it was a surgical and abdominal condition, I made a left rectus incision. It did not take long, after the hand was in the abdomen, to discover there was an opening in the diaphragm, and the abdominal cavity was largely vacant. The negative pressure in the thorax was so pronounced that it was utterly impossible to retract the contents from the left pleural cavity into the abdomen, and we were actually up a stump. Some one present suggested that we make an incision in the thorax and allow air to enter, then the negative pressure would be relieved; this was done. Immediately we reduced the contents into the abdomen. The hernia consisted of the entire stomach, all the transverse colon, all the great omentum, and a part of the small bowel. The boy's condition after such a procedure naturally was not any too good. So instead of taking time to suture the diaphragm, I packed it with iodoform gauze, closed the abdominal wound, and sent the boy back to bed. He got along very well for a few days and then developed empyema. However, he recovered from the empyema and is well today.

He came to see me a couple of years ago, at which time I took an x-ray film of his chest, and I am sorry it did not occur to me to bring that over here to show you. The film shows that his cure had resulted from adhesions of that portion of the diaphragm through which the opening occurred to the chest wall. This opening may occur in any place, but where it is due to trauma it is likely to be in the neighborhood of the trauma.

Let me say that congenital diaphragmatic hernia is not uncommon. I have seen several autopsies made on individuals who died as a result of it, and these are likely to have other abnormalities as well. Our attention was not called to diaphragmatic hernia to any great extent until recent years, but it is becoming more and more commonly recognized. When, as a student, I read of diaphragmatic hernia I thought it was something nobody expected to see, but since the x-ray has been used intelligently, if one has a notion that such a condition may be encountered in the course of a routine examination, it is almost certain to be discovered.

This demonstration which Dr. Mann has given us is an excellent one. In fact, I have never seen anything which

demonstrates the pathology so well, and he has given us a clear idea of the conditions which may exist in diaphragmatic hernia.

DR. ARNOLD SCHWYZER, St. Paul: It struck me, when I heard these cases reported, that there might be an important difference between the two conditions. You heard Dr. Mann say that it was comparatively easy to replace the organs into the abdominal cavity. For that reason the abdominal procedure was the best or the proper one. If you go at it first from the abdominal side, you may succeed in getting everything into place from the abdomen alone, and you may succeed in closing the gap in the diaphragm from the abdominal side without opening the chest above.

The case just cited by Dr. Dennis impressed me as a much more serious acute clinical picture. He could not approach the contents from below; they were firmly fixed in the thorax and he had to go into the chest to get the parts free.

He mentioned that an empyema developed, but he did not say or did not have time to say whether there had been strangulation or not. That is an important point; for as soon as we have strangulation the clinical picture is very much more serious. Then we have to go into the chest, we have to mop out every vestige of hernial fluid, and then after opening the abdomen, we have a chance to work from the two sides. The chances to sew from above make suturing easy and safe.

Introducing sutures from below, when the chest wall is opened, is made easier by pushing down with the hand the diaphragm from the pleural side. Thus the suturing can be done from the abdominal side, otherwise it is easier to sew from above. One may like to sew in such a case on the upper and also the under side.

In a case like Dr. Mann shows, the suture alone is not always an absolutely safe thing and the transplantation of fascia has been suggested. Nevertheless it is a mighty fine thing to have made a diagnosis in such a case and have the patient make such a good recovery.

The important thing in this paper for our benefit is that we have had brought before us a condition which is not as rare as we have heretofore supposed, and the simple fact that we have these pictures in our heads will keep us from making big blunders, especially dangerous blunders, when we have cases like Dr. Dennis seems to have had, in which there was strangulation and need of prompt and correct action.

There were observed cases where the stomach outlet had been blocked, or even where the colon was necrotic. So it is important, in the acute cases, that we think of these conditions. To use the x-ray is the classical way of proving what we have. If we do not have the x-ray at our command, we can get information by ballooning the colon. We can balloon and fill the colon from below and may find that it only balloons up to the splenic flexure. But the x-ray is, of course, the best way of demonstrating the condition.

DR. WARREN A. DENNIS, St. Paul: I would like to say that my difficulty in reducing the contents was not due to the ether, but it was by suction in the pump. With res-

piration I could bring down the contents when I did not make enough tension on the tissue.

DR. JENNINGS C. LITZENBERG, Minneapolis: I wonder if this suction Dr. Dennis mentioned is not a real thing that has something to do with the etiology.

I had one case of diaphragmatic hernia in the newborn in which nearly all the abdominal contents were above the diaphragm. The baby lived twenty-eight days, and it was impossible, it seems to me, that so much of that small intestine could have been above the diaphragm at birth. This child was seen by a pediatricist, and a diagnosis was not made. I wonder if the breathing of the child mentioned by the essayist, and suction of the contents of the abdomen into the chest after birth, might have accounted for the presence of so much of the intestines above the diaphragm. We have observed only this one case in the newborn. We were greatly surprised as to the amount of intestines that were in the hernia.

DR. ARTHUR T. MANN, Minneapolis (closing): Some interesting points have been brought out in the discussion, and they are more or less true. It strikes me regarding the negative pressure that if it were not the adhesions which caused the difficulty in pulling it down, it might possibly be obviated in two ways. The site of the hernia is always high. If this is the diaphragm (indicating), when we have a hernia down here, and it is too tight, we make the opening larger. That might have been done there possibly, and then we would have a little longer place to sew. If large enough to get the finger around well, and still the negative pressure caused trouble, possibly a catheter might have been put there and the air allowed to go in through the catheter while the contents were being withdrawn.

In the case of the newborn, of course there was a natural difficulty, and I do not know the embryology of the subject thoroughly, but it strikes me, at first the lungs are closed; they are tight, and there is probably little or no negative pressure, so that during the formation time of the diaphragm the negative pressure possibly may not be so much of a cause. The negative pressure in the chest cavity is definitely measured and is only about 10 mm. of mercury. In some of these cases the incision between the ribs and the wide stretching of the ribs will give easy and abundant access to the upper portion. Some of these cases will be best operated in that way, by the chest approach, and in some by the abdominal route. In some cases, where there is also trouble below the diaphragm, we have to make the opening both ways.

Some one asked me whether the pneumothorax in my cases was taken care of; it was not at the time of the operation. The air was not pumped out. The lung is already compressed by the contents of the hernia and often there will be no further compression when air replaces the herniated mass on its replacement within the abdominal cavity. We produce artificial pneumothorax, as some medical men do in cases of tuberculosis, and for some other reasons. This air is found to be absorbed gradually, about fifty c.c. each twenty-four hours, so that after a time a new injection must be made to maintain an artificial pneumothorax. That shows what nature will do with the air. In our cases it had absorbed all the air in a reasonable time.

THE TUBERCULOSIS CRUSADE IN MINNESOTA*

H. LONGSTREET TAYLOR, M.D.

St. Paul

"Think the inconceivable thought. Go the impossible way. Do the impossible deed."

About thirty years ago a self-appointed "committee of one" resolved that Minnesota should have a state sanatorium. This resolution was adopted five years before the Massachusetts State Sanatorium at Rutland was erected. The Rutland institution was the first state sanatorium in the United States.

The campaign was opened by an article¹ on this subject which appeared in *The Northwestern Lancet*, December 15, 1893.

It is of interest to note that the relationship of the number of beds for consumptives to the decline in the death rate is clearly stated in this paper, a relationship upon which some fifteen years later Dr. Arthur Newsholm² based his law on this subject. The value of these institutions as schools for the tuberculous is outlined therein. The prophecy that every state and large municipality would have to conduct sanatoria for the treatment of consumptives, is being rapidly fulfilled.

After this bomb proved to be a dud, the committee appropriated Rienzi's oath to the Romans when he said, "Again I swear, the Eternal City shall be free!" and once again resolved that Minnesota should be forced into anti-tuberculosis work.

Then followed years of educational efforts. Illustrated lectures were given anywhere in the state wherever and whenever an audience could be gathered together. These lectures proved to be very popular. The people were eager to learn about tuberculosis and anything that could be done to control its spread. In one place the hall had been condemned as unsafe, as the lecturer discovered when the policeman, who had been stationed at the door to admit only a certain number,

reported that he had turned away more than five hundred people.

Many articles appeared in the press, and even at this late date the committee desires to express its lasting appreciation of the invaluable aid and assistance rendered by the newspapers both in the cities and country to the anti-tuberculosis cause. Line upon line and precept upon precept, the truths about tuberculosis were spread broadcast among the people of the state in the hope of having the support of an enlightened public opinion, to sway the votes when the matter should finally come before the State Legislature for action.

State, county and district medical societies were asked to pass resolutions, which they generally did, sometimes however, only after considerable hesitation.

The Minnesota State Medical Association adopted a resolution endorsing the proposition that the State should care for the consumptive poor at its Duluth session in 1903³.

The committee now felt that the time was ripe for laying the whole matter before the Legislature, which was to convene in January, 1901. A bill for a law to establish a state sanatorium was taken charge of by Senators F. B. Daugherty of Duluth, Judge Grindeland of Warren and L. E. Jepson of Minneapolis. In the House, Dr. Werner Hemsted, Dr. L. W. Babcock, Dr. John H. Dorsey and Rukhard Hurd were enthusiastic supporters of the bill. Senator Daugherty, however, steered the bill most skillfully throughout the session and brought it safely into port in the end. He was the father of Dr. E. B. Daugherty, the prominent tuberculosis specialist, and of Dr. L. E. Daugherty, the successful surgeon, both of whom now reside in St. Paul.

Many prominent physicians and citizens interested in the subject spoke at the committee hearings on the bill. At this critical time Dr. George S. Wattam, of Warren, became a most valuable member of the committee. His wide acquaintance among the legislators was of immense service and to him much of the credit belongs for the successful issue of the initial attempt to secure legislation. Toward the close of the session, Senator Daugherty switched from the bill providing for founding a sanatorium to one creating a commission to investigate the subject and report to the next Legislature.

*Read by special request to the staff of the Lyman-hurst School for Tuberculous Children, February 13, 1923.

Governor Van Sant, who had taken a decided stand in favor of the bill, appointed Dr. James L. Camp of Brainerd, Dr. George S. Wattam of Warren and Dr. H. Longstreet Taylor of St. Paul, President, as the Commission. This Commission was authorized to investigate the subject thoroughly and if it deemed it advisable for the state to erect a sanatorium, it was also to select a site.

The Commission in a body or individually, visited nearly every sanatorium from Canada to North Carolina and from Maine to California.

It decided, *mirabile dictu*, to report favorably upon the proposition that had been submitted to it.

The next work was to select a site. Every member knew that it should be located near the center of population and of railroad accessibility. They also knew that the appropriation would depend upon the selection of a site far north of the ideal one. The Commission inspected a number of locations but adjourned without any decision after many adventures, among which hospitality was not the most pronounced, for many communities were stricken with acute phthisiophobia upon the appearance of the Commission in their midst, and their greatest desire was to speed it upon its way to the next place. Eventually the Chairman, disguised as a summer visitor, selected the site upon which the State Sanatorium was erected⁴.

The report of the Commission⁵ was presented to Governor S. R. Van Sant and transmitted by him with a strong endorsement in his message to the Legislature.

Senator A. F. Ferris of Brainerd and Mr. A. L. Cole of Walker piloted the bill through both houses and secured an appropriation of \$25,000. The bill also created the Advisory Commission for the State Sanatorium. Governor Van Sant reappointed the members of the original Commission and added Dr. G. B. Weiser of New Ulm and Dr. A. P. Williamson of Minneapolis. Dr. Williamson resigned in a short time, and Dr. G. F. Roberts of Minneapolis was appointed to fill the vacancy, which position he held until his death, when Dr. P. M. Hall succeeded him. Dr. Hall was well acquainted with the public health side of the tuberculosis problem from his long experience as head of the Minneapolis Municipal Department of Health. Minnesota is to be congratulated that he has dedicated himself entirely to tuberculosis work

and that the state has the benefit of his learning and skill both as President of the Advisory Commission and as Superintendent of the State Sanatorium. Dr. P. A. Smith of Faribault was appointed in Dr. Weiser's place in 1909. He has served most efficiently as secretary of the Commission since Dr. Wattam's resignation in 1912.

Quite a dramatic event featured the passage of this bill on the last day of the session. The appropriations bill as read, contained no item in regard to the sanatorium. Mr. Cole was very reluctantly persuaded to enter a protest at this omission. It has never been customary to amend the report of the Appropriations Committee, but as soon as he called the attention of the House to the point, so many representatives jumped to their feet and raised such a storm that the speaker sent a committee to see what could be done about it. The committee quickly returned with the news that the chairman of the Appropriations Committee, Senator Ambrose Tighe, said that the State Treasury could spare \$25,000. This sum was immediately incorporated in the bill.

The medical profession as a body, seemed to be greatly prejudiced against the bill and deluged the Legislature with letters protesting against the state going into the practice of medicine. It had been impossible to get the Legislative Committee of the State Medical Association to endorse the bill and much of this opposition was stirred up by that committee. But as one of the members of the Senate said, "There must be something good in this bill, since the physicians are so opposed to it, and I think we had better pass it." From which we may deduce that some knocks are boosts.

Mr. Clarence Johnston, architect, at the request of the Advisory Commission, and in consultation with it, drafted plans for an ideal state sanatorium which unfortunately have been blocked by small appropriations. The result as seen today, in no way resembles the original plans. The conglomerate, however, has resulted in buildings that are well adapted to the purpose for which they were intended. Nevertheless, this patchwork method of assembling an institution, little by little, never has been and never can be satisfactory, although impossible to avoid when building funds come in uncertain amounts at indefinite times, according to the whims of the varying committees on appropriations in successive legislatures.

The Advisory Commission secured the services of Dr. Walter J. Marcley as the superintendent of the state sanatorium.

Dr. Marcley had been superintendent of the Massachusetts State Sanatorium at Rutland since it was opened in 1898, and so was thoroughly well equipped for the post.

The State Sanatorium opened its doors to sixty patients fifteen years ago and now can accommodate two hundred and sixty-five. This is a rate of growth little expected by the Legislature, which thought \$25,000 a very liberal appropriation in 1903. Its present value is \$523,000.

The opening of the State Sanatorium was just fourteen years after the self-appointed committee went to work.

The State Sanatorium was not the first sanatorium to be established in Minnesota. An attempt was made to take care of a few cases in tents during the summer months at the Ramsey County Poor Farm. This was done by the president of the Advisory Commission. In order to keep the colony away, the field was plowed and planted to potatoes early the next year. Shortly after this rebuff, the St. Paul Anti-Tuberculosis Association was induced to open a summer camp on Cherokee Heights, West St. Paul. The president of the Advisory Commission was in full medical charge of this institution. It did not survive more than two or three summers, at which time the neighbors had a mass meeting and it was decided not to precipitate a riot by attempting to open it again.

The first sanatorium in Minnesota was the tuberculosis department opened in the Luther Hospital, at Tenth and John Streets, St. Paul, in 1903, of which department the president of the Advisory Commission was in charge. The patients were removed to the Pokegama Sanatorium, in Pine County, when it opened its doors in May, 1905. The Luther Hospital abolished its tuberculosis department because the nurses were afraid of the patients and refused to nurse them.

In 1908 Minneapolis opened Hopewell, a branch of the City Hospital as its tuberculosis department. The summer camp for children was established by the Visiting Nurses Association and Thomas Hospital was erected by Mrs. George Christian the same year.

In January, 1910, Cuenca Sanatorium was opened under the medical charge of the president of the

Advisory Commission and that summer the foundation of the present Ramsey County Preventorium was laid, when a camp for children, predisposed to tuberculosis, was established on the shore of White Bear Lake. Both of these institutions were built and conducted by the St. Paul Anti-Tuberculosis Association. The Preventorium has always been under the medical control of the then president of the Advisory Commission.

Dr. E. L. Tuohy of Duluth succeeded in having a bill passed by the Legislature of 1909, authorizing boards of county commissioners to appoint county sanatorium boards and to appropriate money for the erection of county sanatoria.

This was the first step toward providing St. Louis county with a sanatorium, and Dr. Tuohy appreciated the importance of such an institution in carrying out the ambitious program which he had outlined for Duluth and St. Louis county⁶. With Dr. William M. Hart and his successor, Dr. A. T. Laird, as his chief lieutenants, it is not to be wondered at, that Nopeming Sanatorium has achieved such an enviable reputation, and that from it as a centre, the county tuberculosis work of St. Louis county is far ahead in its thoroughness, that its dispensary work is widely distributed throughout its territory and its follow-up work all but perfect.

For several years the State Board of Health kept a tuberculosis exhibit traveling over the state doing excellent educational work. Mr. Christopher Easton at this time executive secretary of the Minnesota Association for the Prevention and Relief of Tuberculosis, assisted the State Board of Health in collecting the material for the tuberculosis exhibit, and in the educational work done in connection with it. The nucleus of this exhibit was shown at the International Tuberculosis Conference held at Washington, D. C., in 1908.

Mr. A. R. Blakey⁷, who has since taken his M.D. degree, was manager of the exhibit and traveled with it as long as it was in active service. He too was very active in the educational part of the work. It was visited by thousands in Minnesota and by request journeyed into South Dakota on one occasion.

In 1912, the State Board of Health appointed a committee to draw up a bill for a law under which the counties could be induced to erect county institutions. This committee consisted of Dr. E. L. Tuohy, chairman; Dr. W. J. Marcley, secretary;

Mr. Gerrould, University of Minnesota; Dr. H. M. Bracken, executive secretary of the State Board of Health, and Dr. H. L. Taylor, president of the Advisory Commission.

A great many meetings were held and the proposed bill was most carefully drawn. The bill passed the 1913 session of the Legislature and has been the foundation of the county sanatorium legislation and work in Minnesota. It placed the duty of supervision, control of the institutions and distribution of state aid in the Advisory Commission. The office of executive secretary, created by the law, has been filled by Dr. Robinson Bosworth since the early summer of 1913. The very successful results which have kept Minnesota in the van of the states leading in tuberculosis work have largely been due to him. In an editorial in *The Modern Hospital*, March, 1917, Dr. J. A. Hornsby says, "We are publishing elsewhere in this issue two articles on Minnesota's county tuberculosis sanatoriums, and the remarkable record which that progressive state is making in the fight against tuberculosis. Right here we should like to remind our readers of a few of the things which have been achieved out on the prairies of the Northwest.

"Minnesota has provided institutional care for a larger proportion of her tuberculous population than any other state in the Union. She has not merely provided this care; she has brought it to the doors of her citizens. Realizing that sanatoriums can accomplish nothing unless patients can be induced to enter them, and that separation from the patients' families is generally the greatest deterrent, Minnesota has devised and put into operation a system of county hospitals. Over 60 per cent of the population of the state thus has sanatorium facilities within easy reach, and we have no doubt that provision will be made in the near future for the remaining 40 per cent.

"In construction, equipment and management, these county tuberculosis hospitals have been kept on a uniformly high plane. All buildings must conform to the standards set by the state advisory commission, and explained in Dr. Bosworth's article. Each sanatorium is equipped with all the most modern appliances, whether for treatment or for sanitation. The administration has not been allowed to fall a prey to politics.

"Above all, Minnesota has had the wisdom to confide the oversight of her county sanatoriums to

alert, progressive and most enthusiastic specialists in the treatment of tuberculosis. Every county sanatorium in the state is inspected at frequent intervals by some representative of the state advisory commission in order to avoid deterioration of the service to the level of a county poor farm. Probably there are no state institutions in the country which are so frequently or so thoroughly inspected."

Another evidence of the results of Anti-Tuberculosis work in Minnesota is to be found in the following figures. The death rate in 1921 from tuberculosis was lower than it has ever been in the history of the state. In 1911, 119 people out of every 100,000 in the state died of this disease. In 1921, 77 people of every 100,000 died of tuberculosis. As compared with 1911, ten years ago, Minnesota is saving 972 lives a year.

The Legislature of 1913 also placed a building fund of five hundred thousand dollars (\$500,000) at the disposal of the Commission. To the Hon. Frank Clague, then chairman of the Senate Appropriations Committee, credit is due for this generous sum. This fund could only be used to aid the counties and each county could only receive a sum equal to its own appropriation, thus insuring the expenditure of at least \$1,000,000 in buildings. As state aid to individual counties is limited to \$50,000, the appropriation of \$500,000 has actually been responsible for the expenditure of nearly three times that sum, as many counties have spent considerably more than \$100,000 on their institutions.

From this building fund state aid was paid to each of the fourteen county and district sanatoria in Minnesota. Nopeming and Ottertail county institutions were founded under Dr. Tuohy's county law before the law of 1913 was passed, but under the provisions of that Act, they received their full quota of state aid.

The history of the Ottertail County Sanatorium is both interesting and instructive. As noted above, it was established under the County Sanatorium law of 1909. Under that law the County Sanatorium Commission was supreme. There was no state control as there was no state aid provided by that law.

The Ottertail County Sanatorium was located in an impossible place as far as sewage disposal, fuel supply and accessibility to the territory whose consumptive population it was intended to serve, was

concerned. Such mistakes could not be made under the supervision of an expert board with its standardized requirements in regard to the location, soil, local altitude, wind protection, water supply, sewage disposal, distance from its railroad base, architectural plans and specifications and so on.

The whole thing is a very disagreeable mess, but it shows what County Boards with no experience are liable to do. But the important lesson contained in this chapter of woes, that is the history of this institution, is the absolute necessity of having a State Board, with broad powers and ability to enforce their advice, such as the Minnesota Advisory Commission has.

It would, indeed, be a good thing if every state engaged in tuberculosis work would put their state aid funds into the hands of a Tuberculosis Commission empowered to pay them only to institutions that are doing good work. Minnesota has her state funds better protected than those of any other state and in a measure buys good service from her institutions. Fifty thousand dollars to help out the building and five dollars per patient per week for maintenance, amounts to quite a tidy sum by the end of the year.

The history of the first twenty years of tuberculosis work in Minnesota would be incomplete without a record of the valuable part played by the Minnesota Association for the Prevention and Relief of Tuberculosis.

In 1893 when the voice of one crying in the wilderness was heard in the land, a very feeble attempt was made to organize a Tuberculosis League in Minnesota. The Pennsylvania Tuberculosis Society had been founded in the eighties and was doing good work. In Minnesota, however, even the first convert could not be made and so the matter slumbered for ten years or more when it was revived by the late lamented Dr. F. F. Westbrook, Dean of the Medical Department of the University of Minnesota, and others and Minnesota's Anti-Tuberculosis Association resulted.

In 1907, Mr. Christopher Easton^s became the first executive secretary of the organization which finally struggled through the ills and poverty of its earlier years and was rechristened in 1915 as The Minnesota Public Health Association. It is now, as it has been for years, a very important educational factor in the Minnesota health field.

At the present time under the leadership of Dr.

C. L. Scofield, it has risen to heights of usefulness unattained under any former administration. All misunderstandings and hostilities between public health agencies in the state have become a thing of the past, and consequently public health work is going on much more smoothly and efficiently than was formerly possible. To tell the whole truth one must admit that Dr. Scofield has succeeded in making the lion and the lamb lie down together. This harmony has been the goal toward which Dr. Scofield has been working for many years and he has succeeded in putting an end to conditions which have not only been intolerable, but which were also the greatest hindrance to any progress.

This sketch of the beginnings of tuberculosis work in Minnesota has covered the first twenty years. You are familiar with the more recent achievements and know the structure that has been reared on the foundations described this evening.

And yet there still remains much to be done. Notification of all cases, one of the important requisites to efficient public health work in tuberculosis, is still so inefficient that in 25 per cent of cases the death certificate is the first notice the health department receives. This is partly due to the absence in most communities of any follow-up work. Many physicians excuse themselves for not reporting their tuberculosis cases because the health authorities do nothing, in most localities, after the cases have been reported. This excuse will be done away with when the authorities institute some social and educational service that will be a real help to both physician and patient. Social service must be provided to guide not only the cases recently diagnosed, but also those who have left the institutions. The sanatorium graduate as a rule, is an unfinished piece of work and the superintendent of every institution would welcome an efficient follow-up of his patients, to help them solve their problems and shield them from relapses.

The Advisory Commission has authorized the installation of such a system in one sanatorium district and if results justify such a request, funds will be asked for to spread it all over the state.

Another chapter which has as yet been barely touched upon is the immensely important one of sheltered employment for ex-sanatorium patients. Permanent results from sanatorium treatment depend upon its solution.

Let this recital close with an attempt to portray an ideal arrangement that is not nearly as vision-

ary as a state sanatorium of two hundred and fifty beds seemed to be in 1893.

Picture a village surrounded by green fields and wooded knolls. The well paved streets from all directions converge to a civic center. Here is an administration building, a theatre, a community church, stores and shops, grouped around an attractive square. Near this center several sanitary factory buildings are seen and at the outskirts a large modern sanatorium. Detached cottages, with their flower and vegetable gardens, house the inhabitants of this Utopia whose ruler is the medical superintendent. His police force consists of a corps of visiting nurses; his permit accurately defines the working hours of each factory hand; his overseers in the factory are trained men and women. If the report of his agents, in home or factory, show tendency toward a relapse in any member of the community, he is immediately returned to the sanatorium, which stands between these citizens and the outside world, and from which every one of them has been paroled. In other words they have all passed through the sanatorium to obtain citizenship in this favored village, but their families may join them in their respective cottages and from these healthy residents, workers will be enrolled to do the heavy work.

This is but a sketch and leaves many nooks and corners to be filled in, but any one who has visited Papworth Colony, Cambridgeshire, England, knows that it is founded on an accomplished fact.

"Take up our quarrel with the foe:
To you from failing hands we throw
The torch; be yours to hold it high."

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MINNESOTA'S ANTI-TUBERCULOSIS CAMPAIGN*

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Those of us devoting time and energy to the fight against tuberculosis in this state are warranted, we believe, in having a certain degree of satisfaction or gratification in the results of this effort. True, these results are incomplete, but they serve as an index to what can be accomplished in the future should we not permit ourselves to be misled into the belief that the fight has been won.

During the past ten years tuberculosis deaths have been reduced 35 per cent as shown by State Board of Health statistics. Should we base our estimate on the average yearly deaths prior to the establishment of Sanatoria and compare last year's fatalities with that average, we obtain a 29 per cent reduction. Still there were in Minnesota 1,872 deaths from tuberculosis, all forms, during 1921, showing the need for continued and greater activity for the future.

It is difficult to place before others the one great cause of this decline. It is of some significance, however, that this reduction has been accomplished during a period when Minnesota enjoyed for the first time sanatorium privileges in any degree comparable to its requirements. Credit is due in a large measure to the education of the public concerning tuberculosis and, in fact, concerning public health in general, for we appreciate that factors which tend to prevent disease, whatever that disease may be, and which elevate the general plane of living, reflect directly or indirectly as lessened tuberculosis. To enumerate and evaluate all factors is difficult—to visualize results is easy; a 35 per cent decrease in the 1921 rate over that of ten years ago means 972 less deaths than had the former rate persisted.

The part played by sanatoria is more readily appreciated where it is understood that on January 1, 1922, 10,616 patients had passed through our sanatoria, state and county. Of these 9,707 were pulmonary cases, 829 non-pulmonary; 7,768

*Read by invitation before the Consulting Medical Staff of the Lymanhurst School for Tuberculous Children, Minneapolis, November 14, 1922.

pulmonary cases can be made a basis for a medical report as to results of treatment having remained thirty days or longer for observation. There were 1,939 patients who remained in institutions less than thirty days; 525 of these because of deaths occurring during this short period after admission. Our county sanatoria by law gives preference to the far advanced cases, as is shown by the percentage admitted, 47.2 per cent of the total as compared to 35.6 per cent admitted to the state sanatorium intended by law for the incipient. While more far advanced cases do enter county sanatoria than the state sanatorium, no greater percentage of incipient cases actually reach the state sanatorium, as is shown by 17.2 per cent for county sanatoria and 17.3 per cent for the state institution. The state sanatorium does admit a larger percentage of moderately advanced cases, 47.1 per cent, compared to 35.6 per cent for the county. In order for the state sanatorium to admit favorable cases in large numbers they must include the moderately advanced patient. Thus, there were discharged from county and state sanatoria combined, 1,336 incipient pulmonary cases, remained thirty days or longer, of which number 35 died (2.61 per cent). There were 3,155 moderately advanced cases, of which number, 322 died (10 per cent); of 3,277 far advanced cases, 1,315 died (40 per cent). A fairly good indication of the value of early diagnosis and early treatment. The average duration of treatment was twenty-nine weeks at the state sanatorium and thirty weeks at the county sanatoria. It is interesting to note the groups remaining the longest period; eight cases with Turban 1 lung lesions suffering from complications which threw them into the far advanced group and with negative sputum stayed forty-six weeks on the average; none died, three were improved on discharge, four were quiescent and one arrested.

We have been curious as to whether the far advanced cases increased or decreased the average length of treatment for the total. Including all cases whether they remained less or more than thirty days we get 165 days as the average for the incipient cases, 179 for the moderately advanced and 168 for the far advanced, or an average for the entire group of 172 days. On the other hand, should we eliminate from consideration those cases not remaining thirty days or longer, in other words, those who died shortly after admission and others who could not possibly be benefited by so

short a treatment, we get 196 days for moderately advanced cases and 189 days for the far advanced.

In introducing another subject I wish again to refer to statistics. There were 3,753 cases who had positive sputum on their return to their homes. There were 4,561 who had positive sputum before they entered sanatoria. Although sanatoria are built or subsidized by the state, because of their public health protection character it would appear that sufficient opportunity exists for the infection of healthy individuals before these patients reach our institutions and again after their return home. It is to be regretted that so large a number must lose their greatest opportunity for recovery, which is prior to the appearance of tubercle bacilli in the sputum. That there is a tremendous difference in the prognosis of negative and positive sputum cases is easily shown of 152 incipient cases discharged from sanatoria during 1921. Of these, 129 had negative sputum and 23 positive sputum. Among the 129 negative sputum cases only one died, seven failed of improvement, forty-three improved, twenty-nine reached a quiescent stage, thirty-eight were apparently arrested, ten arrested and one apparently cured. Of twenty-three positive sputum cases, four died or nearly one-sixth, six failed of improvement, about one-fourth, seven improved, and six reached a quiescent stage. None were arrested or apparently cured.

The same condition holds true for the moderately advanced and far advanced cases. Of 130 negative sputum cases, thirteen moderately advanced cases were arrested, twenty-nine apparently arrested and only five died; while among 122 positive cases, twenty-nine died and none reached the apparently arrested or arrested classification.

Among fifty far advanced negative sputum cases eight died but six were apparently arrested.

Of 315 positive sputum cases, 174 died and none were classified better than quiescent upon discharge and only fourteen of these.

The question naturally arises where can be shown the value of sanatorium treatment for the positive sputum cases? There are two replies. *First*, permit me to call your attention to the fact that the length of residence alone, twenty-nine weeks, for the positive sputum cases is not sufficiently long to permit of the cases becoming negative to bacilli, which fact in itself makes it impossible to classify the case better than quiescent. Many of these cases

will lose their bacilli in time after leaving our institutions and then become eligible for a better classification. *Second*, the greatest service rendered by institutional treatment of positive sputum cases is the protection afforded the healthy members of the community, especially the children. It is of the greatest importance to protect children from oft repeated massive infection by tubercle bacilli.

The great reduction in the amount of tuberculosis in Minnesota has been largely attained by removing for eight months on the average some 4,000 positive sputum cases of tuberculosis from their intimate associates. This contention is supported by Newsholme of England, who maintains that the diminution of tuberculosis can be anticipated by computing the percentage of total deaths from tuberculosis occurring annually in institutions following an average hospital residence of one-third of a year, which is approximately one-ninth of the infection period of the fatal cases of tuberculosis. Basing his contentions on the supposition that should all deaths occur in institutions after a residence of the total infection period (3 years) no amount of infection would occur: therefore, no new cases. Newsholme's Law is again supported by the admitted fact that tuberculosis has been on the decrease in those countries where hospitalization of the tuberculous has been possible whether as part of an intelligent anti-tuberculosis campaign or not. Even before Koch's discovery of the tubercle bacillus, tuberculosis was on the decrease but only in those countries where hospital facilities were present and where unintentionally perhaps isolation was nevertheless in a degree efficacious.

If then it can be shown that our efforts are successful in the degree in which positive sputum cases are supervised, what can we take to ourselves in the way of gratification or satisfaction when we consider the 4,000 positive sputum cases returned to their homes under the present system of follow-up? This is where the weakest link in our chain exists, in my opinion.

Not only are these returned cases to be in a large degree sources of infection to others but for many of them supervision is demanded, should they preserve that degree of improvement acquired from sanatorium treatment. The period following sanatorium residence is an extremely dangerous one for the average consumptive. Many factors work to

make this true. Certain gains have been made; to many his general appearance is such as to stimulate suspicion as to the correctness of his diagnosis; he is impatient to break his bonds and return to active production life again; his funds are low and the question of support is pressing. And yet the community offers little of efficient relief or assistance in solving his problems.

Minnesota needs a state-wide follow-up system offering to the consumptive who may be convalescent something of real benefit to his physical, mental and economic condition. This man has every right to vocational training. In many instances, his old trade is not a proper one for an arrested consumptive to pursue. Many cases will never attain that degree of health permitting of full eight hours labor under ordinary conditions of work in competition with normal laborers. Still there is in him producing ability limited perhaps to one-half day or quarter day which is valuable to stimulate and develop rather than to waste entirely by reactivity or to dissipate by over-work, followed by relapse and what must ultimately occur, death. The larger part of the work of supervising convalescent consumptives is in the main limited fairly well. Most of the relapses occur during the first four years after sanatorium treatment is terminated. During the next three years relapses are less frequent due to the survival of the fittest and from the seventh year on the death rate is that of the general population.

Something of childhood infection and childhood tuberculosis might be in keeping at this time. Many interesting facts have come to light in studies of childhood tuberculosis. That much more work is required is evident when we note some of the phenomena which have been brought to light and attempt to correlate them.

Very little organized effort has been made against tuberculosis in infancy and early childhood. According to Hess, when we divide the total number of deaths occurring from tuberculosis into age periods, we find that in the first year of life there are as many fatal cases of tuberculosis as in any other one year age period, and the second year of life is only to a very small degree less fatal. It is interesting to note that beginning with the age period from the second to the third year the total number of deaths from tuberculosis is represented by a figure approximately one-half the total deaths.

occurring during the first or second age period. This condition exists practically until the thirteenth year, where a sharp increase takes place. If we classify the sexes in which this mortality occurs we find that this sharp increase in this age period is entirely due to female susceptibility, there being no definite increase in the death rate among males until the age of sixteen arrives. This has been explained as a matter of maturity, the girl maturing earlier than the boy, and some unknown or little understood function relative to this period of life being responsible for a greater susceptibility to tuberculosis.

While we can divide the susceptibility to tuberculosis into the above mentioned age groups we do not find the age distribution the same relative to the matter of infection. The percentage of infants or young children infected with tuberculosis, according to some authorities, increases from 7 per cent at the age of six months to 75 per cent at the age of six years. We do not find the mortality increasing during the different ages in the same degree; neither do we find the same type of tuberculosis resulting in fatality in the age groups prior to the tenth year and subsequent to the tenth year constant. In fact, most fatal cases up to the tenth year of life are caused from meningeal complications with very little pulmonary disease. After the tenth year the reverse becomes true.

It should be easy to demonstrate from these figures that more attention should be paid to the environment surrounding infants in the first two years of life, which attempt has been so far largely on paper. Investigations made by Hess in New York among 120 homes from which 200 children were admitted to the Farmingdale Preventorium disclosed forty-two other infants under the age of two almost without exception exposed to infection from adults at the homes. At the time of investigation, it is interesting to note that the tuberculous member of the family in over half of these instances was the mother. At first thought it would appear practical to solve the problem by the removal of the mother from the home, but according to Hess this proves practical in very few instances. His solution is the "Children's Preventorium." It would appear also from observations that the question of nutrition not only influences the incidents of fatal tuberculosis, but also affects the incident of infection itself. Hess reported figures that show that in the war countries of Europe during the year 1913, 30 per

cent were positive reactors at the age of four and a half and that in 1919, 30 per cent were reactors at the age of two and a half years and the mortality of tuberculosis in the community was 32 per 10,000 individuals, these deaths occurring in childhood under the age of six.

TABLE No. 1

*Deaths from Tuberculosis in New York City
(1913-1917) According to Yearly Periods*

Age Period (Year)	Pulmonary	Other Forms	Total
0-1	205	1,064	1,269
1-2	184	967	1,151
2-3	98	604	702
3-4	81	359	440
4-5	74	280	354
5-9*	63	134	197
10-14	114	54	168
15-19	514	72	586
20-24	938	78	1,016
25-29	1,069	78	1,147
30-34	1,110	62	1,172
35-39	1,397	59	1,356
40-44	1,058	71	1,129
			10,687

*Figures after five years of age are averages of quinquenniums.

Age Distribution of Patients Reacting to Tuberculin Test

0-6 months	7.8
6-12 months	15.8
1-2 years	17.2
2-3 years	31.1
3-5 years	42.8
5-6 years	75

Bass, in homes for Hebrew infants.

Much has been written relative to the peculiar susceptibility to fatal tuberculosis among children of two years and under. Some account for it by the massive infections due to the intimate association with the mother who may be tuberculous. While it is true that tubercle bacilli fall on the so-called virgin soil at this period of life where opportunities for the development of specific immunity have been lacking, this would appear not altogether the explanation of the high rate of tuberculosis in the first two years of life. For, if the virgin soil explanation was sufficient we would

necessarily expect a high death rate among children at the age of five and six infected for the first time, at which period we find approximately 75 per cent infected by tuberculosis. But at this age period it is as low as any age period in life and does not compare in any degree with fatalities occurring either in the first or second years, or in any of the age periods from twenty to forty. Hess is inclined to explain this in part by the fact that age in itself must confer additional immunity against all infections, tuberculosis as well as scarlet fever and diphtheria. He also comments on the fact that few infants in the first and second years have had any occasion to react against any pathogenic bacteria and that their tissues may be able to respond against tuberculosis infection in later years with a greater degree of success after being stimulated by successful contact with other pathogenic bacteria.

What can be accomplished by the known means of attack against tuberculosis can be rather conclusively shown by past and present anti-tuberculosis campaigns. In 1909 a certain district in Finland was selected for a large-scale experiment in anti-tuberculosis warfare. A mass clinical examination of practically all its inhabitants was made, and then for ten years an anti-tuberculosis campaign was conducted, with a network of dispensaries, propaganda centers, and many other weapons. At the end of this period another mass clinical examination was conducted in the same district, and it was found that the cases of pulmonary tuberculosis had dwindled to a third of their former total number, and it is interesting to note the age periods where this reduction was greatest. In the first decade of life the morbidity was reduced one-quarter, in the second decade a little less than a third, and in the third decade a half. Between the ages of thirty and fifty there was little or no change in the morbidity from tuberculosis, which is as we would expect, for the campaign necessarily influenced the younger generations and represented lessened opportunities for infections with building up of resistance as a protection against active disease.

Doctor Andvord believes that 80 to 90 per cent of fatal cases of pulmonary tuberculosis result from infections within the first three or four years of life and that by deferring the first infection until the fourth year we can force it to assume a permanently benign instead of a slowly virulent character. This contention is supported in Colonel Bushnell's

recent work on "Epidemiology of Tuberculosis," where he quotes a foreign investigator who remarks that he has never seen a fatal case of tuberculosis in an individual first infected after the fourth year of life. A statement such as this shows that much study is required to correlate much of the data offered. Very little is being accomplished to handle the problems relating to tuberculosis in children from a state-wide point of view.

Lymanhurst School is to be congratulated in its undertaking and in its accomplishments. It remains for the other portions of the state to follow.

THE STATUS OF PRESENT-DAY METHODS OF EXAMINATION IN THE DIAGNOSIS OF INTESTINAL TUBERCULOSIS*

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It is well known that tuberculosis of the intestines may result from the ingestion of food containing tuberculosis bacilli. Such an infection is classified as primary and is relatively much more common in children than in adults. Osler quotes the statistics of the Munich Pathological Institute, which record only one instance of adult primary intestinal tuberculosis in 1,000 necropsies on tuberculous patients against 566 instances of secondary involvement. The findings of Councilman, Mallory and Pearce, in 1901, gave a percentage of 5.9 in which the disease was primary in childhood.

Secondary tuberculosis of the intestines is almost always associated with disease of the lungs, although rarely it may appear as a result of peritoneal tuberculosis or of tuberculosis elsewhere in the body. Not only is it secondary to pulmonary disease, but it is also influenced by the state of activity and the degree of involvement in the lungs. For this reason the condition in the lung completely controls the prognosis of any surgical procedure that may be contemplated for relief of intestinal tuberculosis.

Stengel divides tuberculosis of the intestines into three groups: ulcerative, stenotic and chronic hyperplastic. Of these the stenotic represents the most benign process, in which organization supplants destruction of tissue. Here the symptoms

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are those of chronic intestinal obstruction. Chronic hyperplastic disease is analogous to chronic ulcerative pulmonary tuberculosis. It is localized, usually to the ceco-colon, forms a well defined tumor and except for its age incidence may readily be confused with carcinoma. The vague symptoms of onset are sooner or later replaced by those of stenosis and the signs of tumor. Surgical exploration or the finding of tuberculosis bacilli in the stool provides a diagnosis. Both of these forms are relatively rare. The remaining variety, ulcerative intestinal tuberculosis, is extremely common. At Trudeau Sanitarium, among twenty-two advanced cases, Brown and Sampson found intestinal tuberculosis present in seventeen and doubtful in the five remaining. Among sixty-eight moderately advanced, there were nine cases of intestinal lesions and fifteen in which diagnosis was questionable. Among these doubtful cases, surgery often revealed disease. Intestinal disease was present in seven of eleven incipient cases. In summarizing these results, it is seen that of 101 cases of all types, there were thirty-three with positive evidence of intestinal involvement and twenty in which the diagnoses were not positive, but a few of these were proved positive on surgical exploration. These data agree fairly accurately with Stengel's, who places the incidence of secondary intestinal involvement at more than 50 per cent of all cases of pulmonary tuberculosis.

THE IMPORTANCE OF EARLY DIAGNOSIS FROM THE SURGICAL STANDPOINT

The operability of the stenotic and the chronic hyperplastic type of intestinal tuberculosis has been agreed on by surgeons for many years. Since 1917, however, the operability of the ulcerative type has been under discussion, mainly because of the stimulus given by the splendid work of Archibald, whose results will be quoted at length. Years before, the operation designed by Brown for ulcerative colitis had been used by Coffey, who also had placed the bowel at rest by a short circuiting device. In 1921, he presented patients at his clinic that had been operated on nine or ten years before and were in good health. Starr has had similar experiences and in his report makes a plea for earlier diagnosis so that surgical treatment might prevent the later dangerous symptoms of peritonitis or severe hemorrhage. He relates an instance in which both the bowel and the lung profited by an ileosigmoidostomy and a cecostomy.

DIFFICULTIES OF EARLY DIAGNOSIS

However desirable an early diagnosis may be, it is attended with many difficulties. As late as 1909, Walsh said, "The diagnosis of intestinal tuberculosis cannot be made with the slightest degree of certainty from our present known symptoms." Minor, in the discussion of Archibald's paper, agreed with the author regarding the desirability of early diagnosis, but thought it would be difficult for the clinician to provide the surgeon with patients whose pulmonary disease permitted operation while their intestinal disease was limited to such an extent that operation would be possible. He remarks, "It seems to me the fundamental difficulty is in making a positive diagnosis of tuberculous enteritis; there is no positive means of diagnosing it until it reaches so late a stage that no good can be expected."

Such pessimism has been, until recently, justifiable because, though all agree to the high percentage of incidence among tuberculous patients, yet two facts were present that prevented an early positive opinion: (1) there may be no symptoms referable to the intestine, and (2) such symptoms as appear may occur only late in the progress of the disease. It has been the common experience of surgeons that the disease is far more extensive than the clinician could anticipate. But it is the belief of physicians and surgeons that this complication is responsible for high mortality. It had always seemed to me that the onset of recognizable intestinal disease gave as unfavorable an outlook as that of laryngeal involvement. Archibald, however, believes that there is a psychic reason for late diagnosis. The physician, knowing the suffering entailed to his patient and the certainty of outcome, hesitates to recognize its presence.

Again, these late symptoms are merely those common to enteritis or ulceration from non-tuberculous disease. There is nothing specifically diagnostic in diarrhea, abdominal pain, tenderness, or rigidity. Mucus, or blood-stained mucus, or even frank hemorrhage, does not differentiate tuberculosis, nor does the onset of slight fever, emaciation and weight loss. If, however, the background of the tuberculous patient be kept in mind, then they become significant. With that same background, however, earlier signs will have been observed. These are of importance and should be impressed on all clinicians. Brown's description is so clear and conclusive that it may be quoted. "We feel

that when any patient, even in an incipient stage, begins to do poorly, and shows no increase of pulmonary symptoms or signs, or, what is even more suggestive, a lessening of signs or symptoms referable to the lungs, intestinal complications should be borne in mind."

In an indefinite way, the patient who should be doing well is recognizably doing poorly. His nervous system is less stable and the hopefulness of the tuberculous patient is often displaced by the pessimism of the dyspeptic. He fatigues easily, his appetite gradually fails, and he starts a long process of exclusion of food to discover the cause of the vagrant pains, often cramping in character, distention, nausea, and the sense of discomfort that follow the ingestion of food and disappear when he refrains from eating. The natural result from such abstinence is seen in the progressive, though slow, loss in weight. Then follow the signs that signify bowel involvement, constipation, that appeared in 50 per cent of Carman's cases, normal movements in constipated patients that at first encouraged rather than discouraged, slight diarrhea easily subject to treatment, alternate diarrhea and constipation, significant of both small and large bowel involvement (Archibald), or continuous diarrhea associated with vomiting and lancinating pains, flatulence, tenderness, and rapid emaciation.

Osler and Starr both mention hemorrhage as an important sign, but it has been absent in my series. Other forms of tuberculosis are characterized by the insidiousness of their onset. The onset of tuberculosis of the intestine does not provide an exception.

Archibald's diagnostic methods include the suspicions of intestinal involvement provoked by the untoward progress of the tuberculous patient whose pulmonary disease fails to explain his symptoms. He comments particularly on the slight increase in fever which persists and on pain below the epigastrium, in the middle or lower abdomen, appearing in late forenoon or afternoon, transient in character, crampy or stabbing, and aggravated by food, though relieved by fasting. A division according to location of the disease is made and certain symptoms have been found which tend to confirm the presence of the disease in the several areas usually invaded by tuberculosis. Archibald emphasizes the importance of constipation as an early symptom, later giving place to diarrhea when ulceration becomes more advanced, or to alternate

constipation and diarrhea when the small and large bowel both are affected.

Diarrhea is proportionate to the extent of involvement of the large bowel, while constipation characterizes those cases in which the small bowel is most involved.

Among the signs found on physical examination, the most important is the sense of mass formation, an indefinite induration in the cecocolonic area. In our series this also has been our most trustworthy physical finding.

There is, however, a feeling of general resistance and pain on deep pressure, causing recognizable rigidity in the muscles of the abdominal wall. Distention has been less commonly seen, and active peristalsis only with symptoms of obstruction. Another important finding is the presence of a fecal fistula, or a small open sinus in the surgical scar resulting from the removal of the appendix because of symptoms strongly suggesting simple acute or chronic appendicitis. In such cases a most careful search for the ray-fungus must be made before such a sinus is accepted as presumptive evidence of cecocolonic tuberculosis. The presence of sulphur bodies in the discharge has often been the decisive factor in forming an opinion. The presence of tuberculosis bacilli in the discharge from such sinuses is a very uncertain finding and their absence is not diagnostic.

If the onset is characterized by diarrhea, if the stool examination shows the presence of pus and blood, and the pain is in the rectal region, proctoscopic examination is indicated. Often on such examination fistulas in the anus, or the actual ulcer with its caseated base and sides and deep crater, may be discovered. By this direct method of examination, the proctoscopist may obtain smears for microscopic examination, or tissue for histologic examination.

Inasmuch as, from the history and clinical examination, considerable doubt may exist in the mind of the physician with regard to the diagnosis, it was thought possible that the laboratory might be of assistance in reaching an early and accurate diagnosis. This seemed to be the opinion of Lichtheim, who, in 1883, was the first to demonstrate tuberculosis bacilli in stools and who believed that they were positive evidence of intestinal lesion. However, in later years, it was proved by a large number of observers, including Bodo, Phillips, Porter, Laird, Kyte, and Klose, that the mere pres-

ence of tuberculosis bacilli in the stools was not indicative of a tuberculous lesion of the intestines. For example, Phillips and Porter, in their experiments, using the method of staining proposed by Uhlenhuth and Xylander, found tuberculosis bacilli in the stool in seventy-nine of 100 cases; findings were negative in twenty-one. All of the nine non-tuberculous cases examined were negative. All the patients who had bacilli in the sputum likewise had bacilli in the feces, with one exception. Of the forty-two patients without evidence of bacilli in the sputum, twenty-nine gave positive evidence of bacilli in the feces. Of twenty-four patients from whom sputum was not obtainable, it was found that seventeen had bacilli in the feces. In my experience tuberculosis bacilli have not been found in the feces of non-tuberculous patients. Because of the forty-two patients with negative sputum and the twenty-four patients without sputum, Phillip and Porter were led to believe not only that the presence of tuberculosis bacilli in the feces is independent of the presence of intestinal lesion, but that patients with pulmonary tuberculosis without positive sputum or with no sputum should have their feces examined. They believe that examination of feces may be of aid in diagnosis in cases in which tuberculosis is merely suspected. Laird, Kyte, and Stewart, working in Saranac, called attention to the various substances that may contain acid-fast bacilli, and quoted various writers who have discovered their presence in the feces. They likewise used the anti-formin method in a manner similar to that used by Phillip and Porter, but later found that equally good results could be obtained by examining the stools untreated by antiformin. They, however, used both methods, one to control the other. They concluded that tuberculosis bacilli are found in feces of patients with positive sputum, but not if the sputum is negative, in this way differing from Phillip and Porter and also from Rosenberger and Wilson. They believe that sputum appears in the bowel because of the unconscious swallowing of saliva during sleep. Chevalier Jackson, in speaking of the effect of foreign bodies in the upper respiratory passages and esophagus, mentions the surprising quantity of sputum which may be swallowed in this manner. These observers believe that the bacilli do not stay in the stomach long enough to be destroyed. It is conceded, of course, that bacilli may come from ulcers in the bowel, and can be found in cases of tuberculous enteritis, and these writers are also willing to con-

cede the fact that tuberculosis bacilli may appear in the blood stream although they believe that the bacteremia theory hardly explains the frequency of the incidence. Klose, in 1910, had worked considerably on this problem and was in agreement with these authors, inasmuch as he found bacilli in the stools of fifty-five of sixty patients with positive sputum, but did not find them in the stools of patients with negative sputum. Alexander, in the same year, examined eighty-one cases of tuberculosis, including forty-five pulmonary; in fifty-two positive feces were found; in this group were thirty-eight of pulmonary involvement. He used animal inoculations and from twenty-four patients with advanced tuberculosis, he obtained positive evidence in twenty-three instances following the injection of the feces. This seems a surprisingly large percentage when one considers that the bacteria in the feces are of low vitality or dead.²² In the culture experiments of Laird, Kyte, and Stewart, the results were all negative. In 129 non-tuberculous cases, there was no incidence of tuberculosis bacilli in the stools. Wilson and Rosenberger, in their studies, record by far the largest percentage of tuberculosis bacilli-bearing feces in cases in which the sputum was positive, their records giving 100 per cent in 100 cases.

Dr. George Mannheimer, in discussing Dr. Archibald's paper, suggested that stools be examined for mucus, blood, pus, and tissue shreds as well as bacteria, and proposed the method of irrigation of the bowel by syphonage after spontaneous bowel movement, and examination of the sediment of the wash water. He believed such a method to be an improvement over that for the untreated feces.

From the results of the experiments of these various observers it would appear that 75 to 95 per cent of all cases of active pulmonary tuberculosis with bacilli in the sputum likewise would show evidence of bacilli in the stools. For this reason, no particular help can be looked for from the laboratory in making a diagnosis of tuberculous enteritis.

AIDS TO DIAGNOSIS

It is difficult to place a value on any method of arriving at the truth. Each correlates with the other and is necessary in interpreting the findings. Undoubtedly, the roentgenologic examination is the most precise method at our disposal and probably will demonstrate lesions before any other. Yet Carman finds that interpretation is not without difficulty because there are no pathognomonic roent-

gen signs. The filling defect and the absence of the normal barium shadow in the cecocolon are signs of any ulcerative lesion. If, however, the patient is being examined with the thought of his tuberculosis always in mind, such findings take on the certainty of diagnosis. There is a definite predilection for the ileocecal coil and a lesion here is always suspected to be tuberculous when the patient has not yet reached cancer age, and the more so, if he has either active or latent pulmonary disease. Fully 85 per cent of all cases of intestinal tuberculosis are found in the ileocecal area.¹¹

Carman prefers the enema to the barium meal, but in general the technic is the same as for any other intestinal disease. He prefers the enema, because it demonstrates small irregularities of contour by outlining the bowel wall. The barium meal is unevenly distributed and irregularities, especially if of small size, cannot be distinguished from those of disease. On the other hand, Sampson uses the meal in preference to the enema, and has made positive findings on observing the progress of the barium through the bowel when the colon ray showed no evidence of disease. He postulates three rules that, in his opinion, demonstrate hypermotility: (1) complete evacuation from twenty to twenty-four hours, (2) head of column in sigmoid in six hours, and (3) cecum or cecocolon the seat of this hypermotility and the bowel spastic in appearance. The filling defects he describes under four main headings: (1) the smooth haustral sacculations are absent, (2) the bowel has a distinctly ragged appearance, and the affected areas are only partly filled, (3) gravity pressure increase is required to fill the diseased areas which then show string-like irregular shadows extending from the normal into the abnormal bowel, and (4) spasms appear and barium moves distally, rather rapidly. These results were obtained independently and without knowing of Stierlin's work which was reported in 1911. Stierlin believed that the absence of barium at areas where it should have been, suggested hypermotility, and diagnosed the presence of ulceration at the site where the shadow was absent. His results were checked by operations performed by Wilms. To Stierlin belongs the credit for this observation, while, in America, Pirie was the first to discover its presence in cecocolonic tuberculosis. His description is quoted verbatim by Archibald. Inasmuch as the Saranac observers were working in

close coöperation with Archibald and Pirie, the credit for the observation seems to belong to them all as a group.

Certainly the results have stimulated more interest in the diagnosis of intestinal tuberculosis than any previous work. They have provided the clinician with another link in the chain of circumstantial evidence required to give a positive opinion regarding the incidence of tuberculous disease in the bowel.

Carman bases his opinion on three signs: (1) filling defects, (2) spastic phenomena, and (3) obstruction. The conclusions reached from his observations are:

1. Under pressure of the enema the cecum and ascending colon are seen to fill irregularly and are narrowed in their transverse diameter.
2. Normal haustral markings are absent.
3. Bauhin's valve is incompetent.
4. Relief of the enema pressure is accompanied by emptying of involved areas which remain empty, while the remainder of the colon may remain filled.
5. The filling defect and absence of barium shadow in the cecum and ascending colon is not entirely characteristic because it is seen in ulcerative carcinoma of the cecum and in ulcerative colitis.
6. Such a filling defect should always suggest tuberculosis and the disease should be searched for elsewhere.
7. If lungs are tuberculous, the lesion is most likely tuberculous.
8. Hypermotility is not a proper term since in 50 per cent of Carman's cases there was constipation and delayed motility. In his opinion, the appearance of hypermotility is due to diffuse infiltration of the bowel producing rigidity, and the normal inhibition function of the bowel is absent.
9. Under the surgeon's observation, the spasm is in proportion to the size of the lesion. In small solitary lesions, the spasm is local, like the incisura of ulcer of the stomach, and can be visualized, although the lesion is not demonstrable. "Spasm of this type is intrinsic in origin, constant in situation; it is present at a second examination and cannot be effaced by antispasmodics."

CONCLUSIONS

The diagnosis of intestinal tuberculosis is made on circumstantial evidence collected from the history of the ailment, the examination of the patient, the laboratory data afforded especially by: (1) direct examination of rectum through the proc-

toscope; (2) the study of material collected at the proctoscopic examination; (3) the examination of the stools for tuberculosis bacilli, especially in cases of healed or latent pulmonary disease in which the sputum is negative, or in which there is no demonstrable pulmonary disease; (4) the examination of stools for evidence of ulceration, as in other ulcerative conditions; (5) the very definite and accurate observations of the roentgenologist; in view of the frequency with which the intestine is affected and the absence of symptoms or their confusing character, such an examination assumes the proportions of greatest worth and is desirable in all cases of pulmonary tuberculosis, and (6) the microscopic examination of tissue removed by the surgeon in operations performed from choice when the diagnosis is certain, or when advisable because of severity of symptoms, or when an opinion cannot be given with certainty. Appendicitis, intestinal obstruction and carcinoma are common members of the differential group to which tuberculosis of the cecocolon belongs.

The fundamental principle in diagnosis depends on the interpretation of symptoms, signs and laboratory findings, in the general consideration of probability as applied to the tuberculous individual.

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DISCUSSION

DR. F. W. WITTICH, Minneapolis: I was fortunate in being able to read Doctor Lemon's paper before the meeting and hope that when it appears in print you will all avail yourselves of the opportunity to read it because it is much more complete than he has taken the time to give this morning. I think he should be congratulated on giving such a clear cut and succinct résumé of the present status of the diagnosis of intestinal tuberculosis.

This problem of primary and secondary infection is, of course, being revived and I think the conclusions are quite

safe that primary intestinal tuberculosis is relatively uncommon, higher of course in children than in adults.

Doctor Robinson, a couple of years ago at the Mississippi Valley Conference, showed where in Scotland, while visiting there, the incidence of tuberculosis, particularly in children, was much higher in districts where there was no compulsory milch cow inspection. It was so high that he said that after being there for a short time and studying the map of the Health Department, he decided not to drink any more milk.

The incidence of tuberculosis of the intestines, either of the mesentery glands or tuberculous ulceration of other members may be absolutely symptomless, and, as Doctor Lemon has pointed out, is relatively very high even in early cases, conservatively possibly 50 per cent, so that the practical lesson we learn is that any patient coming into the office for examination for tuberculosis should have a thorough abdominal examination as well, augmented by the fluoroscope, if this is available. In a patient coming in with definite frank tuberculosis of the lungs and having some abdominal distress, a slight loss of weight, with the symptoms referable as Doctor Lemon has just described so carefully, one should suspect tuberculosis of the abdomen, not only from the diagnostic standpoint but in the hope that we may prolong the patient's life by early recognition and possible surgical interference.

I would like to report a recent advanced pulmonary case, a boy who had had collapse therapy. He was doing well with his tuberculosis apparently when he became rather grumpy about his food, commenced to get finicky and decided that all foods distressed him. The weight loss was out of proportion to the physical findings. There was no extension of the disease in the opposite lung, yet his general condition became progressively worse. Presently definite pains developed in the abdomen, especially over the cecal region, there was some rigidity, constipation predominated although he did have occasional loose stools. In other words the picture was that of tuberculosis of the abdomen. Operation was postponed for a few days, when the boy became very ill with a sudden acute attack. The surgeons opened the abdomen and found a ruptured appendix, with no tuberculosis in the abdomen at all. There were typical symptoms of intestinal tuberculosis as I would interpret them, and yet were all due to an appendicitis. An interesting thing about their food and peculiar psychic disturbances and depression is sometimes their perverted appetites. We frequently find that these patients will not do well on gruels, chicken broth and things like that, but manage potatoes and gravy very well. A rather peculiar thing about some of our cases was that they could eat coarse food and get no abdominal distress. Occasionally a laxative in an otherwise constipated patient will flare up into profuse diarrhea, which will help in the diagnosis. Seventy per cent of all cases of pulmonary tuberculosis on the average have positive sputums and at least sixty to eighty per cent of these have positive evidence in the feces. The greatest value in the diagnosis is probably the x-ray. Briefly, one might say a patient with some pulmonary or extra-intestinal findings of tuberculosis elsewhere in the body who develops indefinite vagrant pains in the lower abdomen, and whose condition becomes worse without increase in the pulmonary signs, should cause one to suspect

intestinal involvement. If definite physical findings are present such as tenderness, resistance, gas, constipation or diarrhea this diagnosis is suggested. And if the x-ray shows spastic areas, hypermotility, irregularities in filling, etc., although not pathognomonic of the condition, the diagnosis of intestinal tuberculosis is warranted.

DR. EVERETT K. GEER, St. Paul: Personally I want to thank Doctor Lemon for this paper because up to the last two or three years the status of intestinal tuberculosis was very similar to that of pulmonary tuberculosis twenty years ago. At that time the diagnosis of tuberculosis of the lungs was not made until emaciation had occurred and the case had advanced so far that the patient's neighbors had made the diagnosis before he went to a physician. That was about the status of intestinal tuberculosis until the past two or three years, when roentgenological evidence has made the condition so very clear.

To my mind one of the most significant things in suspecting intestinal tuberculosis is the fact that we have a patient with a lung lesion, which is either staying stationary or retrogressing, and the patient is running an irregular temperature, losing weight, etc., and, as Doctor Lemon has pointed out, frequently with absolutely no symptoms pointing to the abdomen. But the fact that he is pursuing a progressive course, with the lung lesion remaining stationary or retrogressing, should make us suspect intestinal tuberculosis. I think one of the earliest symptoms in my experience has been the absolute loss of appetite. If you will x-ray these people, as a rule you will find your typical picture of intestinal tuberculosis.

Furthermore, we know that these intestinal lesions are curable. I was taught that intestinal tuberculosis invariably led to a fatal termination. We know now that this is not true. This subject is assuming such an important place that we are beginning to routinely give our patients barium meals and enemas in an attempt to locate early lesions, and when we do a great deal can be done, not only in a surgical but a medical way. They are put on the proper diet, and also on heliotherapy, either sunlight or Alpine lamp, which will do more for them than any other thing we know of at the present time.

DR. W. S. LEMON, Rochester, closing: I have only three things to say. In the first place, this condition of the bowel may appear in persons who have an extremely small amount of trouble in the lungs, when the lung may be reported as a closed lesion. I think this is important because we are inclined to believe that the activity of the disease in the lungs is of essential significance.

In the second place, I think that all patients with symptoms similar to those I have tried to describe should have the benefit of an x-ray examination as well as a complete physical examination.

Thirdly, I think the stool should be examined, because in my experience it has been a help. In those particular cases in which I was unable to find positive sputum I have found positive stool and been able to make a diagnosis.

As Doctor Geer has said, it is becoming more and more an accepted fact that medical management of these cases is of great value, and the Alpine lamp does relieve these people of pain and takes away the dread and horror of the condition, which we have in years past always considered a fatal ending of tuberculosis.

SURGICAL TREATMENT OF THE URETER IN TUBERCULOSIS OF THE KIDNEY*

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Between 1890 and 1900 nephrectomy was successfully established as the correct treatment for primary renal tuberculosis, largely through the efforts of Tuffier, Mayo, Morris, Israel and Albarran.

In a study of 532 patients operated on for renal tuberculosis at the Mayo Clinic before January, 1918, Braasch found the operative mortality to be a negligible factor, only 1.03 per cent. The late mortality (five years or less) is approximately 20 per cent. This leaves a prognosis of recovery in 80 per cent. Of the patients living, 20 per cent said they had not entirely recovered from their bladder symptoms, so that a complete cure, including cessation of urinary symptoms, may be expected in fully 60 per cent.

The treatment of the ureter at the time of the nephrectomy for primary renal tuberculosis is extremely important. Prolonged drainage of the operative wound compromises a successful operation; for although the bladder may no longer be a source of trouble, the visible, unhealed, draining wound will be a new cause for anxiety.

The general opinion prevails that the ureter, in most instances, is the source of the drainage following removal of the tuberculous kidney, for it also is involved in the tuberculous process. In the early stages of tuberculosis of the kidney there is little change in the appearance of the ureter, but as the infection advances the ureter becomes enlarged, thickened, boggy, pipe-stemmed or strictured.

Several methods of treating the tuberculous ureter at the time of nephrectomy have been suggested. In 1915, Dr. W. J. Mayo asserted that only in 5 per cent of the cases of tuberculosis of the kidney is it necessary to remove the ureters, that these usually are cases in which strictures exist in the lower portion of the ureter close to its juncture with the bladder, and the ureters should be removed with the kidney to a point below the stricture at the primary operation.

In cases of tuberculous ureters without strictures, various methods are used, such as ligation of the ureter with chromic catgut and cautery sterilization of the stump. In some instances, five to ten minims of 95 per cent carbolic acid is injected into the lumen of the pipe-stem type of ureter, with ligation of the cut end, and closure of the incision without drainage. Judd advocates ligation and threading of the end of the infected tuberculous ureter into a rubber tube which he allows to project from the lower angle of the incision for from six to ten days. This allows primary healing of the wound, and, should the ureter drain, the hollow tube or the temporary sinus left by it forms an easy path of exodus and does not interfere with the healing of the remainder of the wound.

END RESULTS

In order to compare the end results of the various methods of treatment, letters were sent to all patients on whom nephrectomies for renal tuberculosis had been performed between 1915 and 1920. Replies have been received from 282 patients in the last few months.

Ligation of the ureter with catgut and sterilization of the cut end with the cautery seems to have been the most effective means of treating the tuberculous ureters that were not sufficiently strictured to produce distension. In 48 per cent of these cases there was primary union of the incision before the patient was dismissed from observation. The incisions remained healed without subsequent drainage. Twenty-seven per cent of patients similarly treated, and whose incisions were draining when they were dismissed (from three to five weeks after operation), report subsequent permanent healing of their wounds.

As might be expected, one of the least effective methods of treating the tuberculous ureter from the standpoint of wound healing, is sealing the cut end of the ureter for from 48 to 72 hours by leaving two pairs of forceps on the renal pedicle which is too short to be ligated accurately and securely. This method was necessary in 28 cases, and in only six (21 per cent) had the drainage ceased before the patient left Rochester. In 13 other cases (48 per cent) the incision healed after the patients had been dismissed from observation. Although the forceps method was used only as an emergency because of the short pedicle it is important since it illustrates the fact that these incisions, if left

*Read before the Southern Minnesota Medical Association, Mankato, Minnesota, December 4-5, 1922.

open by a drainage tube or otherwise, may permit secondary infection in the wound, retarding primary union.

Another method used in the Clinic in the last few years was suturing the cut end of the ureter to the margin of the skin at the lower angle of the incision. This allowed escape of the contents of the ureters to the outside without contamination of the wound. This method has now been practically discarded in the Clinic, and it is interesting to note by actual comparison of the various methods, used for a period of seven years, that this one is ineffective, as measured by primary wound healing, since only 13 per cent healed by primary union before the patients left the Clinic, although an additional 53 per cent healed subsequently.

The results of partial or complete ureterectomy with nephrectomy, as measured by wound healing and ultimate end results in 14 patients with stricture of the tuberculous ureter insufficient to produce obstruction and distension, do not warrant the routine employment of the procedure.

The cases of demonstrable strictured and distended tuberculous ureters obviously form a separate group, since the stricture forms a closed sac if it is distal to the cut end of the ureter. However, this uncommon condition was found at operation in only nine (3 per cent) of the 282 cases of tuberculosis of the kidney. Dr. W. J. Mayo now removes all ureters with the kidney if the strictured ureter is distended to a point below the stricture. In the other cases he clamps the ureter with a hemostat without separating it from its fatty sheath, in order not to disturb its circum-ureteral circulation, divides it with the cautery and drops it back without a ligature, which he believes might act as a foreign body. After thorough hemostasis the incision is closed without drainage.

In most instances improvement in bladder symptoms and improvement in the general condition of the patient are not retarded by a draining wound, and conversely patients whose symptoms have not improved may or may not have draining wounds. This is true regardless of the method of treating the ureter at the time of the nephrectomy.

In conclusion it may be said that following nephrectomy for primary renal tuberculosis the method of compression of the stem of the ureter, ligation with catgut and sterilization of the cut end by the cautery, produces the best end results as measured by primary wound healing. Improve-

ment takes place in bladder symptoms and in general health independent of drainage of the ureter wound after nephrectomy.

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DISCUSSION

DR. ARNOLD SCHWYZER, St. Paul: This is indeed a very interesting subject for the surgeon. It is very often interesting to watch the historical development of surgery in a certain field, and in this field for instance it is quite interesting. First, we only get the worst late cases; these only are relegated to surgery; and then a lot of things are first done that are unnecessary, some that are even harmful. After we learn a little more about the patho-

logical physiology then we discard more of the unnecessary and harmful things, and that is the way it has been in this field. I remember, for instance, my first nephrectomy for renal tuberculosis. This was in 1896. The case was very far gone and the kidney was the size of a grapefruit. The patient, a woman, had for over a year urinated every few minutes day and night. A nephrectomy was done and the ureter could not even be isolated from the thick mass, but the wound healed, though we did not do anything to the ureter. The patient married later and has remained well. Now these things were universally experienced. The surgeons gradually learned something new by doing surgery on the kidney. Through dietetic and general management we can get great improvement in renal tuberculosis, but we know that, if once materially started, as a rule it keeps on until surgery is the only procedure left. Then the ureters were not removed in a number of cases because removal was impossible. And then the one interesting fact came out gradually, the fact that ruled the whole development of surgery on the kidney, that was the tendency to healing of the lower urinary tract; even a very large thick ureter and a very miserably affected bladder have great tendency to heal as soon as the kidney is out. It is an interesting fact that we have an entirely different tendency to healing in the ureter and bladder from the tuberculosis in the kidney. At first we burned out the ureter, and even now some European surgeons go down into it with the cautery and burn it out. Kuemmel, one of the foremost kidney surgeons, does that yet. When we have a marked dilatation of the ureter, it is a bad thing to leave it in. I might mention that I had once devised a method of total ureterectomy in women, which I still think is very neat and the simplest way. We divide the lowest part through a small incision in the vagina. With a little incision you can cut it off there, and then through the nephrectomy wound, which does not need to be made longer than it is anyway for excision of the kidney, you can free the ureter with the fingers and work it up and down and can easily get it out with the kidney. Ureterectomy is a dangerous procedure when the parts are friable close to the bladder as in an advanced case. If you have a thick union between the bladder and ureter, you are liable to get a fistula. Where you have a dilated ureter, removal down to the stricture is best. In the early days the ureter was taken out if possible. This is not done routinely at the present time. It is still mostly brought out at the lower angle of the wound. I think this is a good procedure. I tie it off and inject some pure carbolic acid into the course of the ureter and bring it out at the lower angle of the wound. But sometimes you get a long-lasting fistula and these patients must not figure that they are going to be well in a year. I noticed a long time ago that a bad bladder will not be right in two years, and have told all my patients that they must figure on two and one-half years. In my experience they often improve satisfactorily only after that length of time. But if you have a fistula that runs for two years, it is annoying to the patient and to the surgeon. For that reason if you can cut off the tuberculous ureter and leave it in, this, of course, should be done. The simplest procedure now is the one you have heard described, which Doctor Mayo does. He does not disturb

the tissues around the ureter. If you have no mixed infection in there, it ought to heal.

DR. ALEXANDER R. COLVIN, St. Paul: I was struck with the force of Doctor Schwyzer's remarks about the history of the treatment of the tuberculous ureter and I thought of an expression I heard used when an interne came in and asked the chief what was good for tuberculosis of the lung; the chief hesitated for a moment and then said, "Read the history of the treatment of tuberculosis." Now, since that time the history of the treatment of tuberculosis has changed a good deal. Apart from constitutional measures the question of putting the affected organs out of function seems to be the desirable thing. In the tuberculous ureter, on removal of the kidney there are no more functional demands made upon it and so it seems to heal. In tuberculosis of the joints, particularly in adults, if we can excise the joints and so have no functional demand in the region, the bone ends usually unite and the tuberculosis is cured in the majority of cases. That is due to the fact that no more functional demands are made in that region. And so in tuberculosis of the ureter; as a matter of fact we don't know what the ureter is like below unless we have investigated from one end to the other. I remember seeing an autopsy on a patient who had died of miliary tuberculosis and he had a large tuberculous kidney; about two-thirds of the way down the ureter there was a tuberculous area of about half an inch in width, with no other tuberculous lesion in the course of the ureter. And so in all probability in a good many cases of tuberculous ureters, on removal of the tuberculous kidney we leave lesions that we know nothing of and which heal because no functional demands are ever made upon them.

DR. VICTOR J. LA ROSE, Bismarck: My experience does not extend over a large enough number of cases to draw definite conclusions, but we have had a sufficient number to try out the different methods that have been outlined and the result is that we have adopted a procedure standardized up to a certain extent. That is, in early cases where the infection is confined to the pelvis or papillæ of the kidney, with no demonstrable change in the ureter, we cut through the ureter with cautery, inject phenol into the lumen, tie it off with catgut and drop it back into the wound. In cases further advanced where we have pyelonephrosis, more or less abscess and pus, with changes in the ureter, we have been removing the ureter as far down as we can conveniently and using the cautery for section. We have also had cases where we have pulled the ureter out of the wound, or through a stab wound away from the original incision, with the idea of treating the ureter for a time by injecting phenol, but I would not say that that had any advantage over the other methods of treatment. I feel that the treatment for the ureter is the carbolic acid injection in the earlier cases and cautery resection in the later cases.

DR. WALTMAN WALTERS, Rochester (closing): I would like to take this opportunity to thank Doctor Braasch for the opportunity to work on this material, which was a statistical study, and I wish also to thank the gentlemen who have discussed the paper. The study was undertaken because of the various surgical methods used and merely reviews the results collectively.

A CASE OF ACUTE DELIRIUM APPARENTLY DUE TO BROMIDIA POISONING

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Mr. E. was referred to me by Dr. A. P. Andrus, Ashland, Wisconsin, September 21, 1922. He was 67 years of age. Mother died in 75th year; father in 65th year. Used alcohol excessively until 1907. Thirty years ago a physician prescribed Bromidia for him; he has been using it for sleep as inclination directed, ever since. How long he had taken the toxic doses, varying from .5 oz. to 1 oz. at bed-hour, it was impossible to ascertain; he stated several weeks. He was acutely delirious, disoriented as to time and place, confused, incoherent; he had no recollection as to how he came to the hospital and did not know his son and daughter who accompanied him. His attention could not be fixed; he talked constantly; was noisy; pulled off the bed-clothes and mattress; saw objects on walls and floor; was always wanting to go somewhere and was so acutely disturbed that restraint was required. He talked about a railroad; said there was a wash-out and a terrible wreck and that his son was dead and his daughter, who was single, was married. A man of very moderate means, he talked of his home by the lake and his great wealth; he could not remember from one minute to another what was told him. The falsifications and fabrications of the Korsakoff syndrome were marked. He picked at the bed-clothes, thought he was dressing himself, and mistook the nurses for old acquaintances.

He frequently asked for Bromidia. At one time for 48 hours he lay in a semi-comatose state; only once was there fever; temperature 101 for a few hours; pulse varied between 66 and 76; respiration 18; blood pressure 140 systolic, 85 diastolic; hemoglobin 78 per cent. Red blood cells 4,300,000; white blood cells 10,000; urine negative; there was a marked tremor similar to that of delirium tremens; and an intractable insomnia. October 9th and 11th there occurred short lucid periods. These increased in frequency and duration until he cleared up mentally. The memory of his delusive ideas was very fragmentary. All through his wild delirium

he was good-natured and usually tractable. Maniacal excitement or depression may be present in these cases, there being an undoubted tendency to fatuity. On November 4th, he experienced his first attack of depression; this occurred usually in the morning; afternoons he would be apparently normal. He lost sixty pounds; his original weight being 263 pounds. When he left the hospital November 16th he was in fair physical condition, but the depression and insomnia were still marked. He manifested illusions and hallucinations of sight but there were no schizophrenic symptoms as in Dr. Bennett's case.¹ Mandsley once said that "chloral was crystallized hell" and "Bromidia," says the report of the Council of Pharmacy and Chemistry May 16, 1914, "is a vicious chloral preparation masquerading under a misleading name." Since the advent of the newer hypnotics, chloral has retired into "innocuous desuetude." Only by referring to the older text-books does one find any reference to chloral insanity. Three deaths have been reported as due to Bromidia poisoning. A search of the literature for the past twenty-five years has shown no additional cases to those which were reported by the Council of Pharmacy and Chemistry.² In this report there were short abstracts of two cases but reference only was made to that of Dr. N. S. Lincoln.³ His patient, a woman, had formed the Bromidia habit. After her death, there was found a two-ounce bottle of Bromidia which had been purchased that day, and it was learned that during the preceding twenty days the bottle had been filled four times.

It is absurd to suppose that skillful pharmacists have failed to put up a non-proprietary preparation having the alleged composition of Bromidia where its manufacturers have succeeded. In the national formulary prototype of this preparation we are told that the cannabis indica is filtered out. The synergistic action, therefore, of the allied narcotics in this nostrum, need no longer concern us. The chloral content alone is to be considered.

The prescription of Bromidia in acute alcoholism, which is quite extensively done, is greatly to be deprecated; affecting as it does the heart and nervous system it is a most dangerous agent. The patient in the meantime stands in great danger of becoming a Bromidia addict—the victim of another vicious habit. One thing should be borne in mind—that each fluid dram of Bromidia contains

about 12 grains of chloral hydrate, and chloral hydrate is a habit-forming, death-dealing drug.

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ULCER OF THE STOMACH AND DUODENUM*

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Many theories have been advanced to explain the occurrence of chronic ulceration in the stomach and duodenum, and yet a definite cause for the condition has not been established. Ulcerations in this part of the gastro-intestinal tract differ in many respects from those in other regions. The frequency with which ulcers are found in the stomach and duodenum need not be emphasized except in contrast with the infrequency with which similar lesions occur elsewhere. Just why these ulcerations are peculiar to this segment of the gastro-intestinal tract has not been satisfactorily explained, although certain elements are found in these tissues and in the secretions which are not found elsewhere. Perhaps the most striking feature is the character of the secretion of the glands of the gastric mucosa. This irritating, eroding acid fluid must be a factor in the development of the chronic ulceration, at least, if not in its inception. Inasmuch as the mucous membrane of this part of the tract is constantly exposed to this fluid, but is not affected by it under ordinary circumstances, it is likely that trauma or infection occurs to produce a break in the epithelium before the juices have any effect on the tissues. Hyperacidity, caused by functional disturbance in the stomach, even though it existed for a long time, would not result in ulceration unless accompanied by another factor. Patients with very high percentage of acid in the gastric juices are not more prone to this ulceration. Trauma to the lining of the stomach, resulting from indiscreet choice of diet and improperly masticated food, has been assigned as an etiologic factor in the formation of these lesions, and while this must be taken into consideration, it is nevertheless

evident that trauma is not essential to the formation of ulcers. We have sufficient evidence to prove that a peptic ulcer may form and progress during the time that a strict dietary regime is being carried out and when there is no possible chance of trauma. In performing secondary operations on such patients, we have on several occasions found new ulcers, and old ones which had evidently greatly increased in size. These secondary ulcerations have been found in certain cases in which a gastro-enterostomy had been performed, and in spite of the fact that the anastomosis apparently functioned well. New ulcers have also been found in patients who, between the first and second operation, were under strict medical regime. It is of course possible that, through error, these ulcers were overlooked at the time of the first operation, but in several instances in which the entire surface of the stomach and duodenum was carefully searched a lesion was not detected, yet the definite and easily recognized ulceration was found at the second operation. I am convinced that ulcers may form and develop in certain individuals in spite of precautions, and that the ordinary medical regime and gastro-enterostomy which cure so many patients will not prevent new ulcers from forming in all cases. I believe that some persons have an idiosyncrasy for ulcer formation, because, in some cases observed, ulcers continued to develop, regardless of treatment. Fortunately, such patients are few. It seems quite probable that it is this type of ulcer which has led certain surgeons, especially in Europe, to advocate radical operations for ulcer of the stomach and duodenum. In view of the fact that the less radical procedures have been so satisfactory in most cases in the Clinic, we have been slow to adopt the more radical. Detailed investigations have been made of those patients with a tendency to ulcer formation in an endeavor to establish a definite factor as the cause, but thus far no special characteristics have been noted. Infection undoubtedly plays some part in the formation of ulcers, but it is difficult to explain just why the bacteria select the tissues of the stomach and duodenum in particular, unless the organisms have a selective activity, or unless the vessels in this portion of the stomach are end-vessels and do not anastomose, so that there is no escape for the bacteria if they once enter the vessels. The presence of these end-vessels would seem to offer a favorable condition for embolism and thrombosis. I do not

*Read before the St. Paul Clinic Week Meeting, January 10, 1923.

believe, however, that the vessels in the upper third of the duodenum are end-vessels; hence this theory would not apply and the type of circulation is probably not a factor.

Acute hemorrhagic ulcers have been produced experimentally in the stomach and duodenum in several ways, but especially by introducing organisms into the circulation. The same result has been accomplished by feeding certain substances by mouth, but ulcers have not been produced which resemble the chronic lesion seen clinically in man. The experimental ulcers are small multiple lesions and heal promptly of their own accord. There is a certain group of cases of acutely bleeding ulcers which are not considered surgical. These patients, having had little, if any, indication of ulcer previously, usually have sudden, severe hemorrhage from the stomach. Two or three hemorrhages may occur within a few days. A number of years ago several such patients were operated on in the Clinic to stop the bleeding, but usually what appeared to be a normal stomach and duodenum was found, with no sign of ulceration. In some instances the stomach was opened, but the ulcer was not found, even though the stomach was full of blood clots. Undoubtedly ulcers were present in these cases, although they were too small to be discerned. In view of this experience, it is now believed that many of these patients suffer from small hemorrhagic ulcers, possibly very similar to those produced experimentally in animals by infecting the blood stream. With this in mind, we have recently treated acute hemorrhagic cases by clearing up all foci of infection and by general measures, and have not operated for the ulcers. If the hemorrhages are repeated or if there are other evidences of ulcer, it may then be well to operate. Supporting the theory that the acid chyme is a factor in the cause of the ulceration, especially with lesions developing in the intestine after gastro-enterostomy, Mann has recently carried out a series of experiments in which he allowed the unchanged gastric juices to flow into the small intestine at some distance below the duodenum; in many of these animals ulcers formed. The fact remains that in spite of experiments and investigations and the accumulated experience of clinicians and surgeons, we are unable to explain the cause of chronic ulcer.

CHARACTERISTIC FEATURES OF ULCERS

Chronic gastric ulcer more often occurs as a single lesion, although there may be one large and

a number of small ulcers. Usually the ulcer has a deep crater and much surrounding induration. Occasionally it is superficial, although the mucous membrane is always eroded. The ulceration extends through all the coats of the stomach, and on the peritoneal surface is often sealed by attached fat tags. In most cases, the ulceration extends through and involves the peritoneum, although in only a few are there signs of actual perforation. Nearly all gastric ulcers occur at approximately the same location, on the posterior wall of the stomach just off from the lesser curvature in the middle section of the stomach. Sometimes they are found on the posterior wall near the cardia, and occasionally near the pylorus, but very rarely on the anterior surface of the stomach. The so-called pyloric ulcer is much less common than has been thought. The physical characteristics are those of true ulcer; it is very hard, has a deep crater and an irregular, firm edge. Whether some of these lesions begin as simple ulcers and later become cancers, or whether they represent a type of slowly developing malignancy, is difficult to determine. The clinical history, gastric tests and roentgen-ray examination show that the lesion is either one or the other, but at times the distinction cannot be made even by sight and palpation. Often a detailed microscopic examination is necessary in order to settle the diagnosis. All of us who treat such cases should keep in mind the possibility of malignancy, and if we treat the lesions by any method except removal of the ulcer, we must take the responsibility of carrying an operable case into a less favorable and possibly hopeless condition.

Although the clinical features of gastric and duodenal ulcers are much alike, nevertheless there are many features in which they differ widely. Duodenal ulcers are often multiple; usually one occurs on the anterior surface and one opposite on the pancreatic side. Most duodenal ulcers are on the anterior surface within 2 cm. of the pylorus and nearer the upper than the lower border. This results in the characteristic deformity, a stellate contracting scar which draws down the upper border. It is sometimes difficult to demonstrate the presence of an ulcer on the posterior wall. It is usually some distance below the pylorus and does not cause any apparent change in the appearance of the duodenum, but usually can be felt as a distinct crater ulcer.

I am convinced that lesions of the duodenum are of two distinct types. In one, the lesion is a true ulcer with a crater and with destruction of the mucous membrane and induration of the surrounding tissues. This can be readily picked up and felt as a crater ulcer. In the second type, the characteristic feature is a localized inflammation. The tissues around the ulcer are edematous and congested. Sometimes the edema and swelling are sufficient to change the tissues so that thickening can be felt in the wall of the duodenum. At other times no lesion is felt as the duodenum is lifted, but a localized stippling results from handling the area. When this tissue is excised, it shows all the signs of inflammation, but the mucous membrane surface is intact and necrosis is not encountered as in true ulcer. Some of the areas of inflammation undoubtedly have small spots of ulceration in the mucous membrane, but in others these cannot be demonstrated. So far as we have been able to determine, there is no clinical difference between ulcer and local inflammation, but neither of these conditions is a stage of the other. The area of inflammation produces the same deformity to the duodenal cap that the ulcer produces, but in these cases the roentgenogram does not reveal a niche as it sometimes does in cases of ulcer. Since excision of the ulcer has become more common, the tissues removed have been studied with special interest. In some cases the inflammation seemed to extend around the entire circumference of the duodenum and cause constriction; in others so little of the wall of the duodenum was involved that it did not seem that this could be responsible for the symptoms, and yet the patients obtained relief when this area was excised. In dealing with ulcer and areas of inflammation in the duodenum, one can almost disregard the question of malignancy. Primary carcinoma of the duodenum, which in any way resembles ulcer, occurs so seldom that it is not necessary to consider it in the treatment of these conditions.

CLINICAL FEATURES

The clinical symptoms of ulcer of the duodenum are usually clear-cut and definite; generally a diagnosis can be made with a degree of certainty from the history. This is not always true of ulcer of the stomach. The dyspepsia resulting from the gastric ulcer is more continuous and the pain may or may not have such a definite relationship to food. In

general, however, it may be said that in most cases a diagnosis of ulcer of the stomach or duodenum may be made from the clinical history. There is some question as to the value of the chemical analysis of the gastric content and the knowledge gained from the motor meal in making a diagnosis. During the war Moynihan was obliged to dispense with his laboratory for such examinations, and later he was of the opinion that this had not changed to any appreciable degree the accuracy of diagnosis in gastric disorders. Yet considerable information may sometimes be gained from such examinations, and probably information which could be obtained in no other way, but too much importance should not be placed on them in differentiating ulcer and cancer. The roentgen-ray has gradually become the most important factor in making such diagnoses. The examinations, however, must be made and interpreted by an expert or the readings are likely to be misleading. It requires a great deal of study and experience to obtain the knowledge that is necessary to make an accurate roentgen-ray diagnosis.

The clinical course of a case of ulcer is characteristic. Generally, in the beginning of the trouble the symptoms are present in the spring and fall, with complete remission during the summer and winter. It is difficult to understand how the ulcer which must be present all of the time can cause so much trouble during two seasons of the year and be inactive during the others. It is not unusual for the symptoms to continue in spite of rigid treatment during the active season and then to disappear regardless of indiscretions.

TREATMENT

Some of the most conclusive evidence in support of the value of the medical treatment of ulcer comes from necropsy records. We are constantly seeing more of the so-called healed ulcers of the duodenum in cases in which there was no clinical evidence of an ulcer during life. This would seem to prove that the ulcers are not only common, but that spontaneous healing often occurs. There is no question but that a great deal of good can be done by medical treatment. In many cases the symptoms disappear almost as soon as treatment is instituted, and in some the symptoms do not reappear when treatment is dispensed with. Undoubtedly the ulcer has been healed by neutralization of the contents of the stomach. In certain cases, as soon as the

regime is discontinued and the patient returns to his normal diet, there is recurrence of the symptoms. This should be an indication for operation. Whether medical or surgical treatment is to be instituted in the beginning will be dependent on several factors. An ulcer causing obstruction, or a chronic, bleeding ulcer, is sufficient indication for operation. Generally, if the ulcer is in the stomach, operation is advisable. Experience convinces me that the change seen in roentgenograms a few days or weeks after institution of medical treatment is not due to healing of the ulcer. The ulcer has always been present in the several cases in which I have operated under such circumstances. Any patient with duodenal ulcer who is not doing well under medical management should be operated on.

The surgical management of an ulcer of the stomach should always include removal of the ulcer. If the ulcer is small, it should be excised and a gastro-enterostomy performed. It is necessary to perform a gastro-enterostomy in excising gastric ulcers in order to maintain proper peristalsis in the stomach. Complete inability of the stomach to empty may result from excision of an ulcer from the lesser curvature, even when the ulcer is at some distance from the pylorus. I have observed this in several instances. If the ulcer is large, and especially if it has a posterior attachment, as is often the case, I believe that it is best to perform a sleeve-resection, taking a part of the greater curvature, even though it is not involved. This will maintain normal peristalsis and gastro-enterostomy will not be necessary. I believe that this type of operation will be employed more often in the future, for gastric ulcer. If the ulcer is near the pylorus it is often best to perform a pylorotomy, to complete the anastomosis by end-to-end suture or by closing the ends, and to perform a gastro-enterostomy. The principle in the surgical treatment of gastric ulcer is to remove completely the ulcerated area and to establish the gastro-intestinal tract as simply as possible. A gastro-enterostomy alone in these cases leaves the possibility of malignancy, and furthermore, one-third of the patients will not be relieved by gastro-enterostomy.

The surgical treatment of duodenal ulcer is somewhat different from that of gastric ulcer. In the first place, it is not necessary to consider the possibility of present or future malignancy. If the ulcer is in the free portion of the duodenum so that

a technically accurate excision can be made, the operation of choice is complete removal of the ulcer and restoration of the duodenum. This is a simple and safe procedure. In excising a duodenal ulcer it is not necessary to perform a gastro-enterostomy. If the stomach is large with a tendency to spasm, then not only is the ulcer excised, but the sphincter at the pylorus divided, in order to enlarge the pylorus and overcome the spasm. If the duodenum is not free and cannot be mobilized so that the ulcer may be accurately excised, a gastro-enterostomy alone should be performed.

Few operations have given better results than gastro-enterostomy and its use should be continued in many cases. Before performing a gastro-enterostomy it is essential to determine positively that an ulcer is the cause of the trouble. If operation is performed, accurate technic in suturing the mucous membrane of the stomach and intestine should be employed. There is no operation in which accurate technic is more essential. A few patients may secure unsatisfactory results in spite of all care, but most of them will be completely and permanently relieved.

DYSMENORRHEA*

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Of the many diseases to which women are subject by reason of sex, perhaps none is so common, and at the same time so little understood, as dysmenorrhea. The repeated monthly occurrence of menstruation and the profound symptoms which characterize dysmenorrhea often being of such severity as to incapacitate young women and girls for one or more days, renders it a subject well worthy of our most serious consideration.

In selecting this subject, I wish to say in advance that I have no new theory to propose, no nostrum to exploit, nor panacea to recommend, but wish rather to briefly review the literature on the engaging subject, for it is profitable to occasionally take stock of our knowledge in order to maintain a proper perspective.

Dysmenorrhea, according to the modern conception of the term, signifies not only the colic-like

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pains which accompany the menstrual flow, but, in its broader sense, includes all those disturbances of function which accompany and which go to make up the symptom-complex of pathological menstruation. Dysmenorrhea is therefore, in a strict sense, not a disease, a distinct pathological entity, but is a term used to designate a group of symptoms, the predominating feature of which is pain accompanying menstruation. Since it occurs in patients with very definite pelvic pathology, as well as in those whose pelvic organs, so far as it is possible to ascertain, are perfectly normal, it is evident that there are probably many causes, widely different, and in some instances difficult to determine. It is the purpose at this time to consider especially that form which occurs in the absence of any definite gross pathological disease of the pelvic organs, and it may be said that this type constitutes by far the larger proportion of cases. This form has been variously termed by different authors as idiopathic, essential, or functional dysmenorrhea.

As to frequency it has been variously estimated as occurring in from 50 to 80 per cent of all young women. Personal observation leads me to believe that it has greatly increased in frequency within recent years, and it is probable that the stress of modern life in our cities, with the many and strenuous activities in which young women engage, are responsible for the increase. In confirmation of this view, Menge in a recent paper notes a great increase in Germany, during and since the war, which he attributes to the great change in the social status of many young women and girls of formerly well-to-do families, who through the vicissitudes of war have been obliged to go to work to support themselves.

It appears with the first menstruation, or it may appear some years later. In many instances it is relieved after the first childbirth, but I have recently observed instances of women who suffered severely from menstrual pain who had given birth to at least one or more children, and in whom the most painstaking examination failed to disclose any pelvic pathology. Some of these patients stated that they had never before suffered from painful menstruation.

Many theories have been proposed, the oldest of which, and perhaps the most commonly accepted, is the mechanical theory. The pioneer of gynecology in America, Marion Sims, was an ardent supporter of the theory and it was he who gave

expression to the dictum "no dysmenorrhea without obstruction." According to this theory the pain was explained by the mechanical obstruction to the outflow of blood, either from narrowing of the cervical canal from anatomical peculiarities as congenital stenosis, or from sharp flexions producing angulation. While the mechanical theory was long predominant, and still has supporters, observation has shown numerous instances of high grade mechanical obstruction without dysmenorrhea. In addition, observation shows that in only a small percentage of cases can true obstruction be demonstrated.

With the introduction of pathological histology, studies of the endometrium showed changes which were interpreted as types of inflammation and for the following two or three decades endometritis came to play a very important rôle as an etiological factor in dysmenorrhea. More recently the epoch-making discovery of Hitschmann and Adler, who pointed out that the familiar pictures representing the various forms of endometritis were nothing more than cyclical changes in the normal endometrium which occur during the month, has so discredited that theory that it is now applied to but one form, the so-called membranous dysmenorrhea, and even here an inflammatory basis, according to recent investigation, is not well founded.

Hypoplasia of the uterus has long been observed to be frequently present in dysmenorrhea, and the cause was thought to be due to the inelasticity of the undeveloped uterus, causing painful contractions (Victor Schultz). Stolper, however, calls attention to the fact that dysmenorrhea is not always a symptom in patients with hypoplasia. It may be said that in comparison with the total number of patients who suffer from dysmenorrhea those with hypoplasia constitute only a small minority, and from personal observation I have found that patients with hypoplasia more frequently seek relief for amenorrhea and sterility.

Theilhaber rejects the mechanical and other theories and attributes the pain to spastic contraction of the circular fibres of the internal os, in individuals with a predisposition to abnormal nervous irritability, and, by the way of analogy, cites spasm of the pylorus.

Menge, in 1901, proposed a new theory of dysmenorrhea as follows: The uterus is in a constant state of rhythmic contraction which in physically sound individuals is painless and unnoticed, but

which in the presence of pathological changes in the genital organs, or of functional disturbances of the nervous system, become painful. Menge would therefore place all cases of dysmenorrhea on a nervous basis. In a recent article in the *Centralblatt für Gynakologie*, it is interesting to note that he reiterates his former view as to the conception of dysmenorrhea, namely that the pain is due to the over-receptiveness of the central nervous system, so that a very weak stimulus may call forth a painful response.

Vedeler, also, long ago expressed the opinion that dysmenorrhea was of nervous origin, and was a stigma of hysteria. Kroenig, while he would not go so far as to class every woman with dysmenorrhea as hysterical or neurasthenic, believes that in a great majority of cases there is at least a nervous predisposition. Kroenig further calls to mind the frequent coincidence of dysmenorrhea with other nervous disturbances, such as hyperesthesia, hyperalgesia and vasomotor and trophic disturbances in the genital sphere which are usually recognized as symptoms of functional nervous disease, especially hysteria and neurasthenia.

Since dysmenorrhea in its narrowed sense has for its predominating symptom pain varying from a pathological increase in the uterine contraction to pronounced spasm, from the evidence at hand an over-receptiveness of the nervous system to slight stimuli appeals to the imagination as being very plausible. Obstetricians have long recognized this phenomenon in the pregnant uterus. There is a wide range of difference in the response of the uterus to the stimulus of labor, from the almost incessant pains which occur in some individuals, to the extremely slow and sluggish response in some mothers. This same phenomenon is observed in the puerperium, manifesting itself in the so-called after-pains, and it has always seemed to me that these painful contractions of the uterus have much in common with the pain of menstruation and are probably due to the same causes.

In recent years much attention has been given to a study of the nervous mechanism of pain in menstruation. The nerve supply of the uterus is from the sympathetic and the pelvic portion of the vagus (the autonomous *nervus pelvici*). The pain has been explained on the theory of vagus irritation ("Vagitonie"—Eppinger and Hesz). In substantiation of this theory, Novak observes that the same patients who during pregnancy suffered from ar-

rhythmia, and tachycardia or bradycardia, invariably gave histories of having had dysmenorrhea.

Mathes calls attention to the frequency with which congenitally asthenic individuals, usually that type of women with hypoplasia of the genital organs, suffer from asthenia of the cerebral cortex and abdominal sympathetic.

The most recent theory to engage attention is the internal secretory theory. This theory would explain the symptoms as being the result of functional disturbance of the ductless glands. Naturally interest centers in the ovary, since it is now quite well established that menstruation is dependent upon hormones elaborated by the corpus luteum. Slight deviations from normal due to functional disturbance may result in a change in the quantity of the hormone elaborated, this giving rise to a hyper- or hypofunction with consequent varying phenomena. In the light of present knowledge of the rôle played by the internal secretions, we must take into consideration not only the ovary but other ductless glands as well, remembering that certain of them are antagonistic while others are synergic, and that in health a delicate balance is maintained between them. No other theory so well explains all the phenomena attending menstruation, especially the reactions in other organs of the body often far remote from the pelvic organs. It also furnishes an explanation of the associated nervous phenomena which accompany menstruation, and the trend of opinion today is toward the view that the so-called functional nervous diseases are in many instances due to disturbances in the balance of the internal secretions, with consequent disturbances of metabolism.

The treatment of dysmenorrhea is both medical and surgical. The surgical treatment consists in operations for the relief of definite pathological lesions of the pelvic organs acting on the mechanical theory. Sims practiced incision of the cervix and devised the operation which bears his name. Later, dilatation of the cervical canal became the popular mode of procedure. This was accomplished by graduated bougies after the method of Hegar, or the mechanical dilators, the best known example being those of Ellinger or Goodell or their modifications.

With the coming into prominence of endometritis as an etiological factor, curettage was added to dilatation of the cervix and this treatment came

to be the accepted routine for all cases and is still practiced with modifications. The introduction of stem pessaries after dilation, to be retained for some time, has been a favorite method with some clinicians and has given alleged good results. In obstinate cases, as a last resort oophorectomy has been performed occasionally in the past, but in the absence of definite pathological changes in the ovary, such as chronic ovaritis with cystic degeneration, it can scarcely be considered justifiable.

Medical treatment has consisted of the administration of drugs to allay nervous irritation, such as bromides, and tonics to improve the general health; for the relief of pain, antispasmodics and analgesics at the menstrual periods. Some years ago Fliesz described a method of treatment which in his hands proved successful, which consisted of cocainizing the so-called genital spots in the nose. These consist of localized areas over the inferior turbinated bones which become much swollen and congested during the menstrual periods.

All methods of treatment have up to the present been disappointing. According to available statistics from various sources, surgical measures have given relief in not more than 60 to 70 per cent of cases. Menge, in a recent paper, claims 80 per cent of permanent cures by a method consisting of wide dilation of the entire uterine cavity with Hegar's dilators, carrying the dilation up to No. 16. He then with a specially devised metrotome makes multiple incisions in the cervical canal, after which he packs the uterine cavity with oil-saturated xeroform gauze. The gauze is allowed to remain in the uterine cavity for eight or 10 days.

In recent years, attempts have been made to devise a rational scientific therapy based on our knowledge of the nervous mechanism of the pain. To counteract stimulation of the vagus nerve, atropin at once suggests itself and has been extensively employed with alleged good results. More recently benzyl benzoate has come into use based on its physiological action.

In 1915, Block, in order to arrive at a rational method of therapy, classified dysmenorrhea into three main types: (1) obstructive, (2) ovarian, (3) vagotonic. (1) The obstructive type is characterized by premenstrual uterine colic, scant flow for one or two days, with the pain decreasing as the flow becomes profuse. The cause is obstruction in the cervical canal, against which treatment should be directed. (2) The ovarian type is characterized

by symptoms of bilateral ovarian pain synchronous with the appearance of the flow, premenstrual headache, epistaxis, nausea and vomiting, uterine cramps after the flow is established. The cause is increased ovarian secretion. The treatment recommended is intranasal, by cocainizing the genital spots in the nose after the suggestion of Fliesz, or hypodermic injections of adrenalin. (3) The vagotonic type is characterized by severe cramps in the lower abdomen and other symptoms suggestive of the obstructive type. The cause is increased irritability of the vagus. The treatment recommended by Block consists of large doses of atropin beginning a day or two before the expected period.

Ever since Block published his paper, I have attempted to differentiate the three types he describes and have usually found it possible to recognize them with some slight variations. The most difficult to differentiate is the vagotonic type. For this type Stolper states that if the blood pressure is elevated atropin fails to relieve, the explanation of which he does not state.

Block's ovarian type corresponds in the name with what has long been recognized and termed the congestive type. For this type, following the recommendation of Olshausen, I have been accustomed to prescribe a mixture of fluid extract of hydrastis and ergot, in the proportion of 20 minims of the former to 40 of the latter, three times daily, beginning about a week before the expected period and continuing up to and during the first day of the period. Stypticin may be substituted for the hydrastis and seems to give similar results.

Of other drugs that have been suggested perhaps the latest claimant is uzara. According to the experiments of Gürber and Hirz uzara stimulates the inhibitory fibres of the splanchnic while atropin paralyzes the antagonistic nerve endings of the autonomous system. J. Novak recommends the combination of the two drugs in severe cases.

Organotherapy has, of course, been extensively employed and, according to reports, with varying results. It may be said of organotherapy in the treatment of dysmenorrhea, as in other diseases for which it has been recommended, that with a few exceptions it has proved disappointing and that until we have a more accurate knowledge of the cause of dysmenorrhea and the manner in which those causes operate it will be impossible to apply organotherapy in a rational manner. It may be said, however, that up to the present no other theory

so well explains the phenomena of dysmenorrhea or is so encouraging in the promise of a remedy for its relief.

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DISCUSSION

DR. JENNINGS C. LITZENBERG, Minneapolis: I presume I was invited to discuss this paper on account of my experimental work in connection with the use of benzoate in the treatment of dysmenorrhea.

Dr. Rothrock has carefully and completely reviewed the etiological theories of dysmenorrhea. As long as we do not know the cause of any disease, the treatment is bound to be empirical, and the results more or less unreliable.

In the class of cases Dr. Rothrock mentioned, as the idiopathic, sometimes called the spastic type of dysmenorrhea, antispasmodics are applicable. I had obtained results with the use of atropin; therefore, when Mock, of the Johns Hopkins, theoretically advanced the idea that the benzoate radicle of benzyl benzoate was identical with the other antispasmodics, and, being non-toxic, he advocated its use in various conditions, it stimulated me to make some clinical experiments. Dr. Hirschfelder at the same time made some pharmacological experiments with the drug as to whether it was an antispasmodic or not, and his experiments showed that it was.

I have sometimes been referred to as the advocate of benzyl benzoate. I am not an advocate but only an experimenter. My results given in the first paper I read were something like 60 per cent of relief. These results must be taken with a grain of salt because the nervous element comes in here. It is palpably impossible to believe that a woman can be cured of dysmenorrhea lasting over many years by one dose of benzyl benzoate, as one of my patients claimed to be. One dose of 20 per cent emulsion benzyl benzoate apparently cured her dysmenorrhea. She is one of the hysterical type of cases, and I do not give the drug credit for the cure, although it was the most brilliant result we have had. It is only an antispasmodic and cannot be a cure. We must take all these things with a grain of salt.

Dr. Stacey, of Rochester, has used the same methods that I have. The essential part of my method was the discovery that the usual small dose of benzyl benzoate was absolutely useless. In spite of the fact that several drug houses have, without my consent, stated that I had obtained results

with five grains of benzyl benzoate, there is no truth in such a fantastic statement. With anything less than two teaspoonfuls of a 20 per cent solution one cannot get any results.

I wish to take this opportunity to make a thrust at those drug houses who accept anything new. If we suggest that any drug may be of some value, they exploit it, advertise it, and take it around to all the doctors and say Dr. So-and-So has obtained splendid results with it. I have filed my protest against the statement of a certain firm. I have stated that five grains was a waste of time. I do not know whether benzyl benzoate is of any use or not. My results so far have been over 60 per cent relief, and Dr. Stacey got 50 per cent or more favorable results in the spastic type of dysmenorrhea. The real value of benzyl benzoate and similar drugs is still in doubt.

DR. WILLIAM A. COVENTRY, Duluth: I divide cases of dysmenorrhea into two classes, obstructive and congestive. With the obstructive type we usually find a deformity, such as an acute antifixion of the cervix, and these cases are treated with the supposed idea that there is obstruction, usually at the internal os. In these cases, if you care to, you may attempt to pass a probe up into the uterus. The question arises whether at the time of menstruation the uterus is congested, so that there is a true obstruction at the cervix. In the congestive type I like to look for some cause outside of the uterus and usually find it.

I have been through the organo-therapy line of treatment, atropin and benzol benzoate and the operative treatment. With organo-therapy I have tried all internal secretions with only fair success. With benzol benzoate I have tried small and large doses and have obtained results in 25 per cent of the cases, usually those only of the obstructive type. The congestive type of cases generally call for operative procedure when we find some condition outside of the uterus causing trouble. Operative procedure for the obstructive type in my hands is only successful for a short time. I have tried all the different methods of dilatation in the office, dilatation under anesthesia and the insertion of stem pessaries, and have allowed them to remain from six weeks to two months, and I find I get distinct results when the pessary remains for some period of time in the cervix. These patients are informed that if they are operated on, it is only done on trial, and that if results are obtained they are only good for six months to a year. If you make this proposition to these patients before you start in, you will not operate as many as you did before you made this assertion.

DR. J. L. ROTHROCK, St. Paul (closing): Owing to the very large scope of this subject, I will only touch briefly on the question of treatment. I want to say, I followed out Block's classification that I have mentioned and have found it successful. It is published in the American Journal of Obstetrics and Diseases of Women for December, 1915. It seems, if we are going to treat these cases successfully, we ought to try and classify them, and I have found, by following the classification mentioned, that, while there is some overlapping, we can definitely recognize these types. The type which the author of the classification calls ovarian is the type regarded by others as the congestive type. Long ago Olshausen recommended giving in these cases a combination of hydrastis and ergot, beginning about a week before

menstruation. That is quite successful in a number of cases with the idea of relieving over-congestion of the pelvic organs. He recommended 20 drops of the fluid extract of hydrastis, and 40 drops of the fluid extract of ergot, three times a day, beginning a week before menstruation and continuing until the flow is well established. Owing to the difficulty of obtaining hydrastis, I have substituted stypticin and have used it in combination with ergot with about the same results. In some cases we have failed to get results.

One thing more I wish to mention. We often get relief for one or two menstrual periods with almost any new remedy and then it fails to have any effect. I believe the explanation of this is to be attributed to suggestive therapeutics rather than to any merit which the remedy may possess.

I have found it difficult to follow up these patients for they become easily discouraged and pass into other hands seeking for relief. On that account I am unable to give details as to what the results of treatment have been.

MENTAL ASPECTS IN DELINQUENCY*

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Twentieth century medicine has made the notable achievement of applying itself more and more effectively to disease in its very early stages of development as well as to the phases of prevention. This situation is becoming gradually more and more evident in the field of neuro-psychiatry.

It is quite fitting that an organization of social service workers give evidence of an interest in the subject of delinquency as you are doing. Social service makes possible more effective preventive medicine and hygiene. This is emphatically the case in mental disease and defect.

Delinquency, or abnormal conduct, we have come to regard as not a mere isolated or fortuitous circumstance, but rather an integrated individual type reaction with determinable psychological antecedents, evolving in accordance with fairly definite biological laws.

Now, inasmuch as the subject of delinquency is to be discussed today under two separate headings, one as to mental and the other as to physical aspects, I want to warn against the possible misconception of a dual grouping of distinctive types of etiological mechanisms, as "physical" and "mental" in the production of conduct disorder. The former

tendency to regard psychopathic conditions as being purely mental is no doubt accountable for this conception of dualism in etiology. While we are able to demonstrate mental disorder in a large proportion of delinquents, such so-called mental disorder is nevertheless a reaction of the entire individual. One expects, of course, to find a great variation in the degree of the reducing factors by disease or influences from environmental conditions.

We might as well frankly admit that the problems of delinquency have been relatively neglected; certainly well organized efforts to cope with them can hardly be said to exist throughout the country, even at the present time. The importance and magnitude of this situation become evident when we contemplate the recent United States census figures, which show that annually about half a million individuals are admitted to penal and correctional institutions in our country. Great sums of money are of course required to provide the maintenance for all these offenders. Approximately \$2,500,000 is spent daily to apprehend, convict, sustain and discharge criminals. In New York it has been estimated that it costs \$30,000 to convict a criminal. About two-thirds of the institutional inmates are repeated offenders. The economic phases necessarily loom before us as most important for earnest consideration.

It will of course be quite impossible to attempt a comprehensive discussion this morning. My aim will be rather to indicate to you the prevalence of mental disease and defect among delinquents by referring to typical studies made of groups of adult criminals, prostitutes and youthful offenders, as well as to discuss the principles of prevention; and also to show the need of an appreciation by the social service worker of the importance of psychiatric principles and measures and the part she can perform in their application.

Dr. Bernard Glueck made a psychiatric study of a series of 600 cases of criminality at Sing Sing, New York, in 1917. Of these, 12 per cent were found to be insane; 28 per cent were intellectually defective, and 19 per cent gave evidence of having had an inherent psychopathic make-up. In the remaining 41 per cent habitually bad behavior was frequently found to have characterized the offender's past life history while no defect in personality make-up was demonstrable. We may feel quite safe in presuming that mental conflict and maladjustment resulting in impelling ideas and com-

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pulsive acts in the wrong direction at the time of youth or adolescence, occasioned the beginning of bad behavior in many of these cases.

In 1919 Dr. Weldon of the United States Public Health Service made a survey of one hundred prostitutes, all inmates of a detention home in Louisville, Kentucky. Only seven of this group of offenders were determined to be normal; 33 per cent were feeble-minded, ranging in mental ages from 7 to 9.6 years; 43 per cent were determined to have a psychopathic make-up; one woman suffered from an active psychotic disorder, and three were epileptic. The seven classified as normal were all found to have had a very poor early home environment. Weldon gives the figures of 300,000 as representing the total group of this class now living in our country.

During the past three months, the writer studied a series of eleven cases of delinquency at the Boston Psychopathic Hospital. Two were without mental disease or defect or physical disability; four were psychotic; two had psychasthenic types of reaction; one had an inherent psychopathic make-up; one was mentally defective; and the last case had congenital syphilis. All of these women were sex offenders. Three were also alcoholics, and another was a forger; she lied and stole since the age of nine.

This latter case, C. W., illustrates the problem of serious delinquency in an adolescent:

Patient was a woman aged 24, of Russian Jewish parentage. She was brought to the Psychopathic Hospital by order of the Court for mental observation. She had just been apprehended in Maine two weeks after running away from home with a worthless chap who had a criminal record and with whom she professed to be very much in love. Our study revealed that commencing at the age of nine she began stealing at home and had continued that ever since. At the age of nineteen she forged a number of checks on her parents. At that time she very actively influenced a soldier, by many misrepresentations, to marry her, but she was divorced a year later. Home conditions revealed unusual indulgences toward her on the part of her parents and brothers and sisters, excepting that parents would not allow her to have company at home. She was her mother's pet and the mother always resisted even minor controlling or punitive measures. From the age of four to ten or eleven she suffered from nose-bleed frequently, for which she received unusual sympathy from her family. Several of her brothers and sisters held high educational positions. Excepting that one had been in a state hospital for a year and a half, family history revealed no history of unusual disease. Patient herself was physically entirely negative; neither was there any mental aberration. Psychometric test revealed a higher than average grade. Association studies gave evidences of her preoccupation with her

recent complications only. And in these respects reaction time was moderately delayed.

Here then we have the not uncommon individual with an inherently unstable make-up, a moral delinquent, a psychopathic inferior, who herself says she knows these acts of hers are wrong; indeed, she cries and is sorry for her family because of them but she just can't help doing these anti-social deeds. How are we to regard a case such as this one? To ascribe her instability to bad heredity helps us little. Many families of poorer endowments produce less serious or no offenders. It is true that even some of these so apparently hopeless cases, if given more study from the very early (infancy and childhood) environmental standpoint, lead one to believe that promising results might have been obtained if active measures had been applied when delinquent conduct was first noted. If Clara could have been observed and treated at the ages of five to ten, who can say that her career might not have been entirely otherwise?

Healy and Bronner, in 1916, reported their observations in 2,000 cases of juvenile offenders. Their mental classifications show approximately 10.5 per cent to have been feeble-minded and 7.5 per cent as subnormal mentally; 5.5 per cent were dull mentally from physical causes. About 5.6 per cent of their cases suffered from an active psychosis, and 2 per cent were constitutionally inferior. Epilepsy was present in 7 per cent of their first 1,000 cases whose after-careers were carefully gone over. Mental conflict was determined by them in about 7.5 per cent of all the cases, and adolescent instabilities and impulses averaged 11.5 per cent.

Sanger Brown II, in 1919, studied 200 grade school boys, all having behavior disorders. Disturbed sleep was found as a frequent nervous disturbance, and these children were noted to exhibit a poor emotional control. Irritability was found to have been a character trait in all these. Other varying neurotic complaints were often present. The mentally defective group was much smaller than that of the nervous, the more poorly adjusted and unstable group.

In May of this year the National Committee for Mental Hygiene completed a survey in the city of Cincinnati. One hundred and fifty-seven juvenile court cases were examined in detail. Thirty-six per cent of these youths were repeated offenders. An inherent character defect or unstable mental make-up, in other words a psycho-

pathic personality, was determined in 49.2 per cent of the repeated offenders, and in 21 per cent of the first offenders. Only 3.1 per cent were classified as mentally defective and 63 per cent had an intelligence quotient of over 80. A psychopathic personality is consequently more important for consideration than feeble-mindedness. Mental conflicts, mental maladjustments and other nervous abnormalities were present in 37 per cent more of the first offenders, and in 42.8 per cent additional cases of the repeated offenders.

Impairment in physical health, such as enlarged thyroid, heart conditions, diseased tonsils and adenoids, defective teeth, defective vision, defective speech, anemia, etc., was found in varying degrees in all but 20 per cent of the 157 cases.

The Healy and Bronner statistics show almost 60 per cent of their cases of youthful offenders as coming under some classification of a mental disease. Add hereto the percentage of defects of bodily systems not found in the normal groups, then you have a vivid illustration of the importance of the medical problem involved. In some cases the constellation of "physical" and "mental" factors becomes difficult to resolve itself. The following is a case in point:

E. H. (No. 37424) was recently admitted to the outpatient department of the University Hospital. Patient was a boy of thirteen. Mother complained that she could do nothing with him, that for the past five years he has constantly been found to steal and to tell lies so that she could not depend on him at all. He was incorrigible; did not play with other boys, had no childhood friends and remained by himself most of the time. Took no interest in the usual boyhood sports. In school he had to be placed in a special class. Teachers reported that he was very easily fatigued, that he was very disobedient, very irritable, in fact quite unmanageable as they regarded him. On examination we found upper incisor and canine teeth peg shaped; chronic rhinitis; enlarged cervical glands. His mother gave us the history that the father had three brothers who were all confined in state institutions because of mental diseases. Also that the father died of paralysis and that he had contracted syphilis about a year and a half prior to the boy's birth. Mother noted that the patient had "sores" when he was born. Psychometric test recently reported gave a mental age of ten years and nine months, I Q of 81, not subnormal.

The problems presented in this case have to be met from many angles: psychiatric, serological treatment for congenital syphilis, home situation, school training, etc.

Environmental causes of delinquency were reported by Healy and Bronner to be (a) very early and improper sex experiences, 14 per cent; (b)

unusual autoerotism, 10.5 per cent; (c) use of alcohol in less than 2 per cent; tobacco (more than average) about 9 per cent; (d) extreme lack of parental control, 35 per cent; and (e) extreme parental neglect, 10 per cent; (f) in 19 per cent of cases, alcoholism, immorality and criminality in parents was noted; (g) mentally abnormal parent was found in 7 per cent of 1,000 cases; (h) poverty in 16 per cent, and broken home in 9 per cent, and excessive quarrelling in home 10 per cent, in their group. There is significance in their report that, of their 2,000 cases, 45 per cent gave a determinable background of bad companionship.

These figures then illustrate, to some extent at least, the relationship between neuro-psychiatric disorder and delinquency. As a matter of fact, however, it would not get us very far after examining a delinquent to merely label him with the title of the underlying disease and then refer him back to the court for disposition to a punitive institution. Environmental preventive measures are directly suggested in the previous paragraph. Obviously the bodily health is to be maintained by the usual medical and surgical measures. Adopting a program calling for organized scientific efforts among children when they are first discovered to have personality difficulties, aberrations or retardations will do more than anything else in the prevention of delinquency. The feeble-minded should be supervised when detention in an institution is not required.

In the treatment it becomes incumbent to study the individual's whole life and then to attempt a favorable reconstruction. We must measure his general and special abilities. A personality study, revealing his preferred habitual reactions, should be made. His home life should be investigated; the hereditary endowments and early formative influences require sizing up. The patient's intellectual level, emotional status, and performance capacities are to be determined and judged only along with the medical, social, and other psychological determinations in the particular case. These studies should be made in one well coordinated clinic.

The services of a psychopathic hospital will be required in questionable cases. We know the extreme difficulty met in attempting to ascertain the circumstances of beginning bad habit formation in a delinquent; indeed, many times this appears almost a hopeless undertaking. In the child and adolescent this task is much simpler and from the

standpoint of treatment more times successful. Mental analysis here will lay bare to the youth the abnormal associations with difficult unadjusted emotional experience. New interests will have to be developed many times, and a complete change of surroundings provided for him to facilitate the formation of better habits and to effect a cure.

It is for the social service worker then to keenly observe evidences of nervousness in children especially, and to study their home attachments, special experiences and unusual situations. She should have a common-sense grasp of the influences of abnormal instincts and disturbed emotions on conduct, as well as of the importance of fatigue, pains, food, air, and sleep on the general welfare of the individual. That people are born with varying capacities and have particular complexities to cope with at the periods of infancy and childhood, adolescence, adult life, and senescence, should be impressed on her. These principles should help to guide her in her attitude and approach in case investigations and in her part of the after-care of delinquents.

THE ROENTGEN RAYS IN THYROID THERAPY*

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In reviewing the pathological physiology of the thyroid gland, we find that the clinical course of thyroid intoxication is usually typical. The gland may or may not show definite external enlargement. Usually at first there is slight enlargement accompanied by minor toxic symptoms. The symptoms gradually increase in severity for about eight months and reach what is frequently termed a "crisis." At this stage all the symptoms are at their height. Subsequently there is a sharp improvement in the clinical course; the pulse slows down, the patient gains in weight, and the general health is distinctly advanced. This change is progressive for about fifteen months, when there is a repetition of the first "crisis." After this, either the active symptoms diminish somewhat, or they

run an up and down course. The patient may be invalidated for years or the cardiac and general physical degeneration may progress to such a degree as to cause death.

The manner in which the roentgen ray produces its effect on the living cell is not known, but it has been observed that the actively dividing cells are more sensitive than the resting cells; embryonic cells more sensitive than mature cells. In general, tissues which are more resistant to injuries of all kinds are usually more resistant to radiation. With intensive radiation, there is first a period of stimulation and then a period of depression, frequently resulting in death of the cell. If the radiation administered was not a lethal dose the cell may regain its normal condition and function as before. A latent period separates the time of administration of the roentgen rays and that of the first manifestation of their effect, that is, stimulation or depression. The duration of this latent period varies approximately inversely with the intensity of the radiation. Where the radiation is very great, a latent period may be absent. The effects of radiation upon thyroid tumors as well as upon other neoplastic tissue formations are primarily direct, acting on the cells themselves. The inevitable connective tissue formation plays but a secondary part in arresting the disease. The roentgen ray affects the protoplasm as well as the nucleus of the cell, but, as can be inferred, the interference with the nucleus is usually of much greater significance for the function of the cell than the localized changes in the cytoplasm. Any marked interference with the nucleus results in the death of the cell.

These changes produced in the cells are attended by no risk whatever to the subject provided the ordinary precautions peculiar to x-ray treatment are observed. There is no surgical shock to contend with as occurs in thyroidectomy. There is no hemorrhage or toxic influence of an anesthetic upon an already degenerated heart muscle. In fact, the entire procedure is safe and harmless, and is attended by no increased excitation such as precedes operative interference. In surgical removal of the thyroid additional toxins are forced into the circulation by handling, and these also must be combated. The inevitable percentage of mortality is another strong argument against surgical procedure. In extreme intoxication unques-

*Read before the Reserve Officers Medical Society, Symposium on Goiter, November 9, 1922.

tionably surgery should not be attempted. It is true that the surgical removal of the thyroid will produce results much more rapidly than roentgen-ray treatment when the correct amount of thyroid tissue is removed, but the uncertainty of improvement, the dangers of operation, and the advisability of first using less extreme methods of treatment will militate against operative interference in favor of radiation. It appears then that radiation is the treatment of choice in all types of toxic goiter.

The technique employed is as follows: The patient's head and upper portion of the body are covered with lead-impregnated material or lead foil with the exception of an area extending from just below the external auditory meatus down to the lower border of the thyroid gland and transversely to the center of the middle lobe. An eight or nine inch spark gap is used, corresponding approximately to ninety or one hundred thousand volts, respectively. Three to six millimeters of aluminum are used for filtration of the rays. This amount of filtration will absorb most of the soft rays which would otherwise be absorbed by the skin and not reach the gland. Each side of the neck is radiated, thus producing what is known as a "cross fire" effect. After this, an area of about three inches square over the upper portion of the sternum is treated so as to produce the same effect in the thymus. This radiation is repeated at intervals of about two or three weeks, depending upon the intensity of the rays, their quantity, and the duration of the exposure. It is not advisable to produce even a mild erythema, the guide to the treatment being the condition of the skin over the area radiated.

It is of extreme importance to maintain a check of the effect of the radiation. This is done by frequent observations of the metabolic rate. The rate should be obtained at least in each interval between treatments, and if possible oftener. When the rate decreases rapidly to within thirty or twenty-five per cent above normal it is well to discontinue treatment at this stage. Where the reduction of the metabolic rate is slow and covers a period of about five or six months, treatment should be carried on until the rate has reached about fifteen per cent above normal. The changes produced by the x -ray continue to exert their influence for as long as two or three months after the last treatment, and if treatment were continued until the

metabolic rate reached normal the final result would be a negative rate, or hypothyroidism, necessitating the use of thyroid extract.

The thymus is always radiated because of the possibility that Graves' disease is due to primary disease of this gland. It is claimed that thyro-intoxication leads to hyperplasia of the thymus, and a thymus intoxication leads to enlargement of the thyroid. The effects of the thymus and thyroid on other endocrine glands are probably antagonistic. Unquestionably, many patients suffering from thyroid disease are thymus carriers. During the active stages of the disease investigators have found marked hyperplasia of the medulla of the thymus, the presence of many Hassall's corpuscles, and accumulations of eosinophils along the septa of the gland and along the blood vessels. Since institution of thymus radiation the results have fully confirmed in practice what is still regarded as pure theory.

I wish to call your especial attention to the fact that we frequently have thyro-intoxication and even exophthalmic goiter secondary to a focal infection in the tonsils and adenoids, and several cases of toxic goiter have been reported wherein the symptoms cleared up after the removal of diseased tonsils and adenoids. By the above described method of radiation not only is the thyroid gland treated but also the tonsils and adenoids, and if there be tuberculous glands present they also are acted upon beneficently.

The presence of substernal thyroid is quite unusual and probably the only direct means of diagnosis is visualization of a substernal mass by means of roentgen-ray pictures accompanied by thyroid symptoms. Roentgen-ray treatment would be the same as for any retro-sternal mass.

The treatment of thyroids by roentgen-ray is necessarily a long-drawn-out procedure, extending over many months, and at times requiring even two or three years for a complete cure. The roentgen rays attained their popularity through their marked effect in exophthalmic goiter. Here their effects are at times almost miraculous, and the thyroid symptoms may be enormously decreased within a few weeks. The pulse rate will come down, the toxicity diminish, and the patient gain rapidly in weight. Such cases, however, are not the usual course in this therapy. Usually there

is a gradual reduction in all symptoms with a slow increase in the weight of the patient extending over a period of five or six months. As the metabolic rate decreases, the condition of the patient grows constantly better. At times the metabolic rate does not return to normal before one or two years. However, in the meantime, the condition of the patient usually improves to such an extent as to obviate operation.

I would not have you believe that roentgen-ray therapy is efficacious in every case of thyroid intoxication. Rather it is of benefit only in selected cases, cases which show undoubted metabolic hyperactivity. The adenomatous and the exophthalmic types are especially favorable. The border line patients are usually the ones in whom we find the least response to treatment. Many of

these are really not hyperthyroids at all, but other intoxications with similar manifestations. The others of this group of border line cases we must admit as failures, just as there are failures in surgical and medical treatment, without being able to explain their lack of response to intensive radiation.

The other forms of goiter, such as the simple goiter, the colloid goiter, the cystic goiter and the goiter of adolescence are not proper subjects for roentgen-ray treatment. Here the only complaint of the patient will be either the disfigurement or the pressure upon the trachea. As the roentgen rays do not appreciably decrease the size of the goiter, it is obvious that they can have little or no effect in these conditions. Here there is but one procedure to follow, and that is surgical removal.

THE NEW DAY IN MEDICINE

In his speech of acceptance of the presidency of the American Medical Association Dr. George E. de Schweinitz went to the very heart of the subject of the relations between the medical profession and the public. There is a new age in medicine other than improved devices in fighting disease. It concerns the policy of the profession toward the public in the application of science. Some physicians have resisted professional progress in this line. They would abolish community hospitals and health centers and maintain the strictly private relation which consists of treatment when the doctor is called.

The answer of Dr. de Schweinitz to this attitude is that a "transition from individual to organized practice already has begun" and that the movement is rapidly spreading. This means that the progressive leaders recognize the profession's obligation to the public in fighting disease regardless of the effect on private practice. They regard the benefits of medicine as belonging to humanity and not to the doctors.

Dr. de Schweinitz cites a recent investigation as showing that when preventive public health measures are put into effect with the co-operation of the physicians, "not only is the number of people applying to the practitioner for treatment increased, but his work has been made simpler and more effective." When idealism is made to pay it ceases to be idealism. But it must not be forgotten that before it was known that idealism in medicine would pay many doctors spent years of devotion to public health rather than to the private fee.

With the profession under such leadership as Dr. de Schweinitz and his supporters the public will feel no misgiving toward the organization of men who, more than any other group of equal number, hold in their hands the power of human life and death. The public, moreover, should ally itself with this organization to stamp out quackery and drive from the profession elements that would exploit the people rather than assist them to health. It can do this by fighting such measures as that put over by the last Missouri Legislature to grant physicians' licenses to applicants who pass a state examination, regardless of their education and training.—Editorial in *St. Louis Dispatch*.

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EDITORIAL

Some Pollen Bearing Plants of Minnesota With Special Reference to Hay-fever

Since the year 1903, when Dunbar¹ produced conclusive proof of the specific action of pollen in the causation of hay-fever, much work has been done to establish which plant species are the principal contributory factors. The earlier notion that hay plants or members of the grass family alone were responsible for the prevalence of the disease has had to be abandoned, and subsequent research has shown that various other unrelated groups of plants are involved. This has been effected through the recognition, by several students of the hay-fever problem, of certain facts and principles of floral biology which had long been known to professional botanists.

When it was definitely demonstrated, especially through the investigations of Scheppegrell,² that the pollen of anemophilous or wind pollinated plants was the principal cause of hay-fever, the problem of discovering which species of any locality were

the chief sources of disturbance became greatly simplified.

The work of segregating the offending species has been guided by the fact that, in spite of a vast number and variety of forms, practically only two methods of pollen distribution obtain throughout the whole seed plant series.

In one case the plants have enlisted the aid of insects for the distribution of their pollen, and this class is characterized by showy or attractive flowers and more or less sticky, cohesive, and comparatively heavy pollen. As a general rule, the production of pollen in this class is very sparing, and here belong such plants as asters, goldenrods, dandelions, sunflowers, locusts, roses, and many others which probably through their very showiness are popularly, yet erroneously, held responsible for causing hay-fever. Fortunately, the vast majority of our native species of plants belong to this category.

The second class is composed of species, belonging to many different families, whose pollen is wind distributed. The flowers in this category, unlike those of the preceding, are almost universally small and inconspicuous and offer no means of alluring insects, either through nectar or attractive colors or odors. Furthermore, these flowers are for the most part unisexual, so that in order to effect fertilization the pollen has to be transported from one individual of the species to another. This transfer of pollen is brought about by wind currents and becomes, therefore, a method of chance entirely. The primary requisites of such a hit-or-miss process are an enormous production of dry, light, non-sticky pollen, and a prodigal expenditure of it in order to insure fertilization.

An idea of how enormous this pollen production is may be gained from the fact that an acre of rye on reliable estimates produces about 200 pounds of pollen. How readily such pollen travels through the air is revealed by the fact that aeroplanes, scouting for rust spores in southern Minnesota during the past season, collected pollen on slides exposed at altitudes of two miles.

In the state of Minnesota there are upwards of 450 species of wind-pollinated plants, a goodly proportion of which, if properly tested, would probably be shown to be potential hay-fever plants. The number of species which are chiefly responsible for the prevalence of the disease is much smaller, due partly to their comparatively greater abundance

and partly to their occurrence near to or within centers of population. In addition, the size and buoyancy of the pollen of some species are limiting factors.

The following list includes the principal hay-fever plants occurring in Minnesota.³ Those marked with an asterisk (*) are regarded as of special importance, and in most cases are recorded as having given positive tests. Those not marked may be suspected mainly because of close natural relationship with species which give positive tests.

The species are arranged for convenience in seasonal groups and the scheme does not take cognizance of natural affinities.

1. VERNAL GROUP: Plants blossoming from the beginning of the season to June 1; composed of trees and shrubs entirely. *Alder, Ash, *Birch, Box Elder, *Cottonwood, Butternut, *Elm, *Hackberry, *Hazel, Hickory, Ironwood, *Oak, Poplar, *Walnut.
2. EARLY SUMMER GROUP: Plants blossoming from June 1 to July 1; composed mainly of grasses, but including also some representatives of the Dock, Goosefoot and Pigweed families. The principal species of this group are *June Grass, or Kentucky Blue Grass; *Timothy, *Red Top, *Sweet Vernal Grass, *Quack Grass, *Brome Grass, *Rye, *Barley, *Orchard Grass, *Wild Oats, Fescue Grass, Porcupine Grass, *Sheep Sorrel, *Dock, *Lamb's Quarter, *Plantain and Tumble Weed.
3. MIDSUMMER GROUP: Plants blossoming from July 1 to Aug. 10; composed mostly of the Goosefoot, Amaranth, Nettle and Plantain families, together with late or long blossoming grasses. The principal species are *Goosefoot, *Russian Thistle, *Shad Scale, *Pigweed, *Tumble Weed, Wild Nettle, Wood Nettle, Clear Weed, Hemp, *Common Plantain, *Wheat, *Oats, Millet, Pigeon Grass, Squirrel-tail Grass, Wild Rice, Witch Grass, *Corn, *Sorghum, Finger Grass, Wild Rye, *Barnyard Grass.
4. AUTUMN GROUP: Plants blossoming from Aug. 10 until late Autumn; composed almost entirely of species which belong to the *Compositae* or Thistle family. This group includes the most troublesome hay-fever plants, among which the principal species are *Common Ragweed,

*Giant Ragweed or Kinghead, *Western Ragweed, *Marsh Elder, *Cockle Burr, and several kinds of *Wormwood or Wild Sage.

C. O. ROSENDAHL.

1. Dunbar, W. P.: Zur Ursache und Specifischen Heilung des Heufiebers. München, 1903.
2. Scheppegegrell, Dr. W. P.: Hay-fever and Hay-fever Pollens. Arch. Int. Med., June 15, 1917.
3. A survey of the hay-fever plants of Minnesota, with special reference to their geographical distribution, relative abundance, and time of blossoming, is being prepared by the writer. This will be ready for publication at an early date.

Lady Nicotine

It is with some hesitation that one attempts to summarize the evidence for and against tobacco. The consumption of tobacco has been so much on the increase, especially the use of the cigarettes, that it is highly desirable that further investigations be made in the hope of reaching a more definite scientific opinion as to its exact status.

Generalizations on the subject are likely to be inaccurate, as the weed is used in such a variety of ways and individual susceptibility is such a variable quantity. Recent investigations, however, show that the effects of smoking largely agree with the experimental effects produced by the drug nicotine and the inference is drawn that the symptoms produced by smoking are those produced by nicotine in conjunction with those due to the carbon monoxide contained in the tobacco smoke.

The majority of men and a growing percentage of the fair sex smoke, at times to excess so that the functional effects due to overindulgence are a matter of common experience. The schoolboy's experience with his first cigar is a good example of the toxic action on the unimmunized. The after-breakfast cigar has relieved many a case of constipation through the stimulation of intestinal peristalsis. Alvarez on the other hand has pointed out that smoking tends to diminish the hunger contractions of the stomach itself. Such an action would obviously tend to appease the appetite and might well account for the increase in weight noticed when an individual swears off. Smoking will produce a tumor or aggravate one already present. Temporarily, smoking will relieve sleepiness through its stimulating effect. An excess, however, often inter-

feres with sound sleep. Heart irregularity in the form of extrasystoles, acceleration of pulse and even cardiac pain are well recognized results. Reduced cardiac reserve with the exhibition of "poor wind" has gained general recognition among athletes and doubtless with some reason.

When it comes to evidence of definite organic changes resulting from the use of tobacco, existing proof is very meager. Erb, some time ago, thought that some relation existed between the intermittent claudication of arteriosclerotic origin and excessive use of cigarettes. That the arteriosclerosis became actually aggravated by smoking was his belief. Toxic amblyopia affecting the central field of vision promptly clears up upon the elimination of smoking in early cases, but may show definite optic nerve changes and permanent impairment of vision in protracted cases. The comparative rareness of this condition, however, in comparison to the large number of smokers makes one feel that the danger of organic optic nerve change has been overrated and that other factors may play a large part in its production, notably alcohol. Proof, then, of organic change resulting from the use of tobacco is almost nil.

Tobacco smoke is said to contain a variety of substances, among others sulphuretted hydrogen, hydrocyanic acid, nicotine, pyridin bases, carbon dioxide and carbon monoxide.

Experimentally, as was said, nicotine action largely agrees with that produced by smoking. Experiments go to show that nicotine acts on the central nervous system and the peripheral ganglia and produces acceleration of the pulse, later followed by a depression and, if in strong enough concentration, complete cessation of rhythm. The point of action in the heart is not known.

The carbon monoxide content of tobacco smoke is apparently not negligible. One investigator has found in the neighborhood of 1 per cent of the monoxide in cigarette smoke and as high as 5 to 8 per cent in cigar and pipe smoke, the latter figure being as high as occurs in some samples of eliminating gas. Carbon monoxide exerts its poisonous effect through its greater combining power with the hemoglobin of the blood replacing the oxygen. It is estimated that 10 to 20 per cent of the oxygen combining power of the blood can be replaced by inhaling cigarette smoke for an hour at the rate of five times a minute. This might explain the

diminution of "wind," pasty complexion and headache following excessive smoking. This combining power of carbon monoxide, which is 225 times that of oxygen, might also well explain why the plethoric individual can tolerate smoking better than the more anemic type.

The examination of large series of smokers and non-smokers has shown little variability in blood-pressure readings, but some elevation in pulse rate in smokers in proportion to their use of tobacco. In some individuals at any rate a marked rise in pulse and blood pressure accompanies the inhalation of a cigarette, lasting fifteen to twenty minutes and the more marked in non-habitues.

The psychologic effects of smoking have been investigated and it has been found that the immediate effect of smoking both on users and non-users is a lowering of accuracy in finely co-ordinated reactions including associative thought processes while decreased accuracy results in habitual smokers if deprived of its use. The speed of reactions is apparently not affected.

Doubtless a certain amount of immunity to tobacco is produced and only an excess of the usual amount of smoking produces noticeable symptoms. The primary stimulation, it may be inferred, results in a reactionary depression so that the sum total of effects produced may well result in greater fatigue in a specified period of time. This inference is borne out by the frequent experience that a prolonged period of strain from various causes is better met by total abstinence from the use of tobacco, while numerous instances are afforded where a crisis of short duration is tided over by an increase in the usual amount of indulgence.

COMMUNICATIONS

March 23, 1923.

Dear Editor:

A further study of hydatidiform mole has been undertaken at this hospital, especially in regard to the frequency of malignancy following this condition. An attempt is being made to collect case reports from outside physicians. Cases reported by physicians will be greatly appreciated, and the physician will be given due credit in any literature published. Address communications to

ROBERT B. KENNEDY, M.D.,
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Chicago, Ill.

OBITUARY

DR. GEORGE E. PARSONS

The untimely death of Dr. George E. Parsons, of Elk River, which occurred at the Abbott Hospital, Minneapolis, April 5, 1923, caused widespread sorrow to a host of friends among the laity as well as the medical profession.

Dr. Parsons was born in Elk River, August 9, 1882. His early educational training was received in the Elk River schools. Upon his graduation from the Elk River high school in 1901, he entered the medical school at the University of Minnesota, from which he received his medical degree in 1905. While engaged as an interne in a Minneapolis hospital, Dr. Parsons was called home to assist Dr. Whittemore, who had been taken ill and was unable to go on with his practice. Following the death of Dr. Whittemore, Dr. Parsons took over the practice in Elk River, which he held until the time of his death. He was ever interested in the progress of the medical profession and in county and state medical work. Dr. Parsons had been secretary of the Central Minnesota Medical Society for several years prior to his death and was actively engaged in that capacity up to the time of his last illness.

Dr. Parsons was beloved by everyone in Elk River for his untiring devotion to his medical work in the community. It is felt that his constant attention to duty was the ultimate cause of his untimely death, which came as a result of a weakened condition following attacks of pneumonia and influenza.

Dr. Parsons is survived by his wife, his mother, Mrs. D. H. Parsons of Minneapolis, and one sister, Mrs. Albert Campbell, also of Minneapolis.

DR. CHARLES PLINY SMITH

Dr. Charles Pliny Smith, formerly a resident of Minneapolis, and house physician at Asbury Hospital during the World War period, died at his home in Watertown, S. D., March 21, 1923, at the age of 79 years.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL MEETING

IMPORTANT NOTICE

The preparation of the program for the annual meeting of the State Association to be held in St. Paul October 10 to 12, 1923, is nearing completion and those desiring to appear on the program must submit their names and subjects to members of the program committee or to the secretary of the State Association by May 5, 1923.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Northern Minnesota Medical Association will be held June 4, 5 and 6, 1923, in Alexandria. The names of those who will participate in the program appeared in the April issue of MINNESOTA MEDICINE.

Sinclair Lewis, the novelist, brother of Dr. C. B. Lewis, president of the association, will address the meeting Monday evening, June 4.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The mid-summer meeting of the Southern Minnesota Medical Association will be held in Faribault, Monday, June 11, 1923. The Rice County Medical Society will act as hosts for the meeting, which will be a one-day session, to be concluded with a banquet in the evening.

AMERICAN MEDICAL ASSOCIATION MEETING

The annual meeting of the national association will take place in San Francisco, June 25-29, 1923. The official call announces that the House of Delegates will convene on Monday, June 25th, and the Scientific Assembly will open with the general meeting on Tuesday, June 26th, at 8:00 P. M. The sections will meet on Wednesday, Thursday and Friday, June 27-29, inclusive.

The various county medical societies have arranged for clinics to be conducted throughout the state on July 2 and 3.

Members so desiring may take the Steamship *Wilhelmina*, sailing from San Francisco July 3, and returning July 25, spending a week in Hawaii.

Arrangements are being made to run a special car to San Francisco for the A. M. A. meeting, provided enough members signify their intention of taking advantage of these arrangements. The special car will be routed via the Northwestern route to Omaha, thence Union Pacific and Southern Pacific to San Francisco by the route of the San Francisco Overland Limited. This car would leave Minneapolis at 6:15 P. M., and St. Paul at 7:00 P. M., Friday, June 22, arriving at San Francisco Monday, June 25, at 2:30 P. M. Those who desire to take advantage of this special car arrangement are requested to communicate with the secretary of the Minnesota State Medical Association, 403 Central Bank Building, St. Paul, before June 15.

The American Proctologic Society will hold its twenty-fourth annual meeting at Los Angeles, June 22 and 23, 1923, preceding the A. M. A. meeting in San Francisco. Headquarters will be at the Hotel Alexandria and the profession is invited to attend the sessions.

CENTENARY OF LOUIS PASTEUR

The centenary of the birth of Pasteur has been chosen as the occasion for a trip abroad by members of the medical profession interested. The visit is being sponsored by the French government and arranged by the *Compagnie Francaise du Tourisme* for the express purpose of developing travel in France. An honorary committee of American physicians and surgeons has been appointed.

An unusually interesting program has been arranged for the trip through France, beginning July 11th and ending

August 18th, which will include a reception tendered by the Pasteur Institute, School of Medicine, visits to Pasteur's birthplace at Dole, automobile trips to the environs of Paris, the Argonne, Aix les Bains, Evian and Vichy, and through the Alps.

The program and details of arrangements may be procured from L. J. Garcy, General Agent, 281 Fifth Avenue, New York City.

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

The fortieth semi-annual meeting of the Southwestern Medical Society will be held May 17, 1923, at Slayton, Minn.

The afternoon session will be devoted to the following program:

President's Address—Dr. F. W. Metcalf, Fulda, Minn.

Public Criticism and Opinion of Legislative Efforts by the Medical Profession—Dr. L. Sogge, Windom, Minn.

The Present Economic and Professional Status of the General Practitioner—Dr. Charles L. Sherman, Luverne, Minn.

Experimental Observations on the Relation Between Influenza and Epidemic Hiccough—Dr. E. C. Rosenow, Rochester, Minn.

Case Report—Dr. Ellsworth Johnson, Windom, Minn.

The business session, which will be held at 5:00 P. M., will be followed by a banquet supper, to which members and friends in the profession are invited.

LYMANHURST SCHOOL FOR TUBERCULOUS CHILDREN—PROGRAM OF THE CONSULTING MEDICAL STAFF

All meetings will be held at 7:00 P. M. in the Lymanhurst School, 18th and Chicago. F. E. Harrington, Commissioner; J. A. Myers, Chief of Staff.

May 8—The Tuberculosis Work of the State Board of Health—A. J. Chesley, M.D., Executive Secretary of the Minnesota State Board of Health.

The Past Accomplishments and the Future Possibilities of the Medical Staff of the Lymanhurst School for Tuberculous Children—J. A. Myers, M.D.

May 22—A Study of D'Espine's Sign in a Group of Tuberculous Children—E. D. Anderson, M.D.

Pulmonary Cavities in Tuberculous Children—D. M. Siperstein, M.D., and H. Bauguess, M.D.

June 12—The Innervation of the Organs of the Chest—A. T. Rasmussen, A.M., Ph.D., Associate Professor of Neurology, University of Minnesota.

June 26—Vital Lung Capacity in College Women—Ruth Boynton, M.D.

Vital Lung Capacity in College Men—W. P. Shepard, M.D.

All persons interested in tuberculosis are invited to attend these meetings and participate in the discussions.

OF GENERAL INTEREST

Dr. E. H. Richter, formerly of Sauk Center, is now located at Hunter, N. D.

Dr. L. J. Bowman, formerly of Masonville, Iowa, is now located at Borup, Minnesota.

Dr. H. L. Goss left the Mayo Clinic April 2 to go into private practice in Minneapolis.

Dr. Byron W. Parrott, of Long Prairie, is again at his office after an illness of some duration.

Dr. A. M. Hanson, of Faribault, has gone to Paris to take post-graduate work at the Pasteur Institute.

Dr. and Mrs. J. J. Gelz, who have been spending the past year in Europe, are reported to have returned.

Dr. and Mrs. James E. Arnold, of Vernon Center, are the parents of a baby daughter, born in April.

Dr. Thomas Lowe, of Pipestone, has been appointed a member of the State Board of Medical Examiners.

Dr. and Mrs. S. F. Adams of Rochester are the parents of a baby daughter, Elizabeth Fabyan, born March 12.

Dr. J. A. McIntyre, of Owatonna, is reported as having recovered from a recent serious attack of pneumonia.

Dr. and Mrs. Chas. L. Carman, St. Paul, who have been traveling abroad, are expected home about the 15th of May.

At the recent city election held at Madison, Minn., Dr. Nels Westby was unanimously re-elected to the office of mayor.

Dr. R. T. Glycer has sold his practice at Brooten to Dr. De Wayne Townsend of Belgrade and has located at Sunnyvale, California.

Dr. S. Amberg, of the Department of Pediatrics of the Mayo Clinic, Rochester, returned from a clinical trip to Europe, March 12.

Dr. and Mrs. Charles Bolsta, of Ortonville, have returned from Chicago, where Dr. Bolsta recently completed several weeks of clinical study.

It is reported that Dr. F. H. Bayard, formerly practicing at Monticello, Iowa, has leased offices and will locate at Stewartville, Minnesota.

Friends of Dr. P. H. Irish, of Akeley, will be glad to know that he has fully recovered from a recent illness and resumed his practice.

An evening lecture is held every evening at the Mayo Clinic, Rochester, for the visiting physicians and the members of the staff and fellows of the Clinic.

Dr. A. J. Kaufmann, formerly of Cheyenne Wells, Colorado, has located at Franklin, where Dr. Kaufmann has leased quarters and will engage in practice.

Dr. F. L. Roberts, who has been assisting Dr. O. M. Porter at Atwater for the past several months, has given up his work there to engage in the U. S. Public Health Service.

Dr. A. C. Strachauer, Minneapolis, spoke before the Ohio Academy of Medicine and the College of Medicine at the University of Cincinnati, April 30th, on "Surgery of the Stomach."

Dr. J. A. Watson, Dr. E. S. Strout, Dr. W. E. Patterson and Dr. J. S. Macnie, of Minneapolis, have announced their affiliation with the Eye, Ear, Nose and Throat Clinic, 74 Eleventh Street South.

Dr. Frederick A. Dunsmoor, Minneapolis, has returned from an extended vacation, during which he visited points in California, Florida, Cuba, the Panama Canal, and enjoyed a cruise on the Caribbean.

Dr. J. G. Saam, of Eveleth, has removed to Chicago, where he is taking special work in ear, nose and throat at the University of Chicago. Dr. Saam expects also to take special work at the Rush Medical School.

Eleven fellows began graduate work at the Mayo Foundation, Rochester, April 2. Seven of these men are majoring in surgery, one in otolaryngology, one in medicine, one in dermatology, and one in dental surgery.

Dr. Waltman Walters, of the Mayo Clinic, Rochester, attended a reunion meeting of the Dartmouth College Alumni last month, and is at present on a clinical trip which will include New York, Boston and Charleston.

Our attention has been called to an error which appeared in our April number to the effect that Dr. Haldor Sneve of St. Paul was planning to change his residence to Redlands, California. We are taking pains to correct this misstatement.

Dr. L. E. Claydon, of Goodhue, has returned after an absence of two months or more in attendance at clinics at hospitals in Boston, New York, Cleveland and Chicago. Dr. Claydon also did some special work in the Johns Hopkins Hospital.

Dr. Warren Wilson, of Northfield, was cited in a home newspaper recently as being the oldest physician in point of years as well as practice in Northfield. Dr. Wilson completed his twenty-fifth year of practice at Northfield the 1st of April.

The contract has been let for the construction of a large addition to the Pokegama Sanatorium at Pokegama, Minnesota. It is stated that work will begin almost immediately and the new building will be made ready for occupancy just as speedily as possible.

According to reports made to the Division of Communicable Diseases of the New York State Department of Health, 308 cases of encephalitis lethargica developed in New York State during February of this year, which is more than in any other month during the last two years.

Dr. Florence R. Sabin, Professor of Histology, Johns Hopkins Medical School, and H. F. Traut, of Johns Hopkins, gave Mayo Foundation lectures at the Mayo Clinic

March 26. Dr. Sabin lectured on her recent work on the origin of blood cells, and Mr. Traut lectured on new studies in the anatomy of the kidney.

The Bacteriological Laboratory of G. H. Sherman, M. D., on February 15, 1923, filed suit against the International Magazine Company, William Randolph Hearst and others, in the sum of \$1,600,000. The suit is based on the articles by Paul H. De Krnif, Ph.D., entitled "Doctors and Drug Mongers" and "Vaccines for Broken Legs," which were recently published and which are claimed to be malicious and false.

By the time this number of MINNESOTA MEDICINE reaches its readers the campaign of the Greater University Corporation of the University of Minnesota for the purpose of raising \$2,000,000 will be on. The plan is to erect a stadium as a memorial to the Minnesota soldiers who lost their lives in the World War and a fitting university auditorium to be named in memory of the late President Northrop. The medical alumni are asked to do their share in this worthy undertaking.

The National Board of Medical Examiners has announced their schedule for examinations as follows:

Part I. June 25, 26, 27, 1923

Part II. June 28, 29, 1923

Part I. Sept. 24, 25, 26, 1923

Part II. Sept. 27, 28, 1923

Applications for these examinations must be made on or before May 15, 1923. Further information may be obtained from the Secretary, Dr. J. S. Rodman, 1310 Medical Arts Bldg., Philadelphia, Pa.

Beginning April 9, and continuing over a period of six weeks, the Mayo Clinic, Rochester, will be the scene of a number of meetings and conferences of great interest. April 9, 10 and 11 there will be a Conference of Physiologists from nearby medical colleges. The Japanese Commission of Physicians will visit the Clinic five days beginning April 28. The American Urological Society will meet in Rochester May 21 to 23. The American Surgical Society will meet May 31, June 1 and 2. The Mayo Clinic Alumni Association will hold its annual meeting June 4, 5 and 6, and the Interurban Clinical Society will meet in Rochester June 20 and 21.

One of the very recent pieces of literature sent out by the Palmer School of Chiropractic makes the following bold statement: "Millions of men and women today wish for a professional training. They find in almost every profession obstacles which, under the circumstances, they cannot surmount—long years of study or educational requirements which they do not possess. Chiropractic, as a profession, has neither of these insurmountable obstacles. We require a reasonable degree of intelligence and realize full well that this cannot be gauged by the amount of time one may have spent in school. Our scientific course covers a period of three collegiate years of six months each, which may be completed in eighteen consecutive calendar months."

NEW AND NON-OFFICIAL REMEDIES

During February and March the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

ELI LILLY AND CO.:

Schick Test and Schick Control—Eli Lilly & Co.

Diphtheria Toxin-Antitoxin—Eli Lilly & Co.

H. K. MULFORD CO.:

Pneumococcus Antibody Solution, Types I, II and III Combined—Mulford.

PARKE, DAVIS & CO.:

Diphtheria Toxin and Control for the Schick Test—P. D. & Co.

Neo-Silvol.

Mercurosal.

ABBOTT LABORATORIES:

Sulpharsphenamine—Abbott.

BORCHERDT MALT EXTRACT CO.

Borchardt's Cod Liver Oil and Iron Iodide.

E. R. SQUIBB & SONS:

Sulpharsphenamine—Squibb.

NON-PROPRIETARY ARTICLE:

Sulpharsphenamine.

Tincture No. 111 Digitalis—P. D. & Co.

Bacillus Acidophilus Milk-Lederle.—Whole milk cultured with *Bacillus acidophilus*. It contains not less than fifty million of viable organisms (*B. acidophilus*) per c.c. During recent years reports have been published which indicate that the growth in the intestinal canal of the normally present *Bacillus acidophilus* may be increased so as to make it the predominating organism, by the administration of milk inoculated with *B. acidophilus*, by the administration of viable cultures of *B. acidophilus* in conjunction with lactose (sugar of milk) or by administration of lactose alone. The therapeutic value of cultures of *B. acidophilus* is still in the experimental stage. For a discussion of the actions and uses of lactic acid ferment preparations, see New and Non-official Remedies 1922, p. 156. *Bacillus acidophilus* milk-Lederle must be kept on ice and should be used within one week of the expiration date which appears on each package. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., Feb. 3, 1922, p. 323.)

Theocin Sodium Acetate.—A brand of theophylline sodium acetate—N. N. R. (See New and Non-official Remedies 1922, p. 357.) Winthrop Chemical Co., New York. (Jour. A. M. A., Feb. 10, 1923, p. 401.)

Diphtheria Toxin and Control for Schick Test—P. D. & Co.—Diphtheria Immunity Test (New and Non-official Remedies 1922, p. 320) marketed in packages containing one vial of 0.1 c.c. of undiluted, standardized diphtheria toxin, one vial of 5 c.c. of sterile physiologic solution of sodium chloride, one vial of 5 c.c. of diluted control of Schick test and one sterile syringe point. Each package contains material sufficient for fifty doses. Parke, Davis & Co., Detroit, Mich. (Jour. A. M. A. Feb. 17, 1923, p. 475.)

Diphtheria Toxin-Antitoxin Mixture—Lilly.—A diphtheria toxin-antitoxin mixture (see New and Non-official Remedies 1922, p. 282), each c.c. constituting a single human dose and containing 3 L + doses prepared in accordance with the requirements of the U. S. Public Health Service. Marketed in packages of three vials sufficient for one treatment. Eli Lilly & Co., Indianapolis, Ind.

Schick Test—Lilly.—A diphtheria immunity test (see New and Non-official Remedies 1922, p. 320) marketed in packages containing one vial of diphtheria toxin sufficient for ten tests and a vial of sterile physiological solution of sodium chloride and in packages of ten vials containing toxin sufficient for one hundred tests accompanied by ten vials of sterile physiological solution of sodium chloride. As a control, the Schick test control, representing diphtheria toxin of the same lot treated to destroy the specific exotoxins is supplied. Eli Lilly and Co., Indianapolis, Ind. (Jour. A. M. A., Feb. 25, 1922, p. 553.)

Mercurosal. — Disodiumhydroxymercurisalicoylacetate. Mercurosal contains from 43.0 to 43.8 per cent of mercury in organic combination. It is claimed that mercurosal is relatively free from irritant action, that it is eliminated without untoward effects on the kidney, and that the toxicity is relatively lower than mercuric chloride or mercuric salicylate. Mercurosal is intended for the mercurial treatment of syphilis. It is administered either intramuscularly or intravenously. Mercurosal is marketed in two forms: Mercurosal Intravenous, tubes containing mercurosal 0.1 gm., and Mercurosal Intramuscular, tubes containing mercurosal 0.05 gm. Parke, Davis and Co., Detroit, Mich. (Jour. A. M. A., March 24, 1923, page 844.)

Pneumococcus Antibody Solution, Types I, II and III Combined.—An aqueous solution of the specific pneumococcus antibodies, Types I, II and III in equal proportions, approximately free from the proteins of horse serum. There is some evidence that this antibody solution is of value in the treatment of lobar pneumonia.

Pneumococcus Antibody Solution, Types I, II and III Combined—N. N. R.—Marketed in packages of one 50 c.c. double-ended vials with a complete intravenous outfit, and in packages of one 50 c.c. double-ended vials. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., Mar. 24, 1923, page 844.)

Sulpharsphenamine.—The salt disodiumdiaminodihydroxy-arsenobenzenedimethylenesulphonate, adjusted by the addition of inorganic salt to an arsenic content of from 18 to 20 per cent. The arsenic content of 3 parts of sulpharsphenamine is approximately equal to 2 parts of arsphenamine. The actions and uses of sulpharsphenamine are the same as those of neoarsphenamine, over which it is claimed to have the advantage of greater stability of solution in the presence of air and of permitting subcutaneous injection. For subcutaneous or intramuscular use the drug is dissolved in sterile, freshly distilled water in the proportion of about 0.1 gm. to 0.3 c.c.; for intravenous use a greater dilution is desirable. (Jour. A. M. A., Mar. 31, 1923, page 919.)

Sulpharsphenamine—Abbott.—A brand of sulpharsphenamine—N. N. R. It is marketed in ampules containing respectively 0.2 gm., 0.3 gm., 0.4 gm., and 0.6 gm. The

Abbott Laboratories, Chicago. (Jour. A. M. A., Mar. 31, 1923, page 919.)

PROPAGANDA FOR REFORM

Ginseng.—Ginseng has found no place in modern therapy. However, it has been reported that infusions of the extract of ginseng root are diuretic. But the most recent study has shown that the drug does not affect the nitrogen metabolism. Even the quack would find it difficult to discover a tenable potency on the basis of which the use of ginseng could be "boosted." (Jour. A. M. A., Feb. 3, 1923, p. 328.)

Mercupressen.—From the advertising issued by the Barsa Chemical Co., Inc., 28 W. 23d St., New York, for Mercupressen, this product is essentially the same as that which the Spiroicide Corporation, 28 W. 23d St., New York, marketed as "Spiroicide." Spiroicide was claimed to be composed of metallic mercury, copper sulphate, cypress cones, henna, nutgalls and dried pomegranates. The product was sold in the form of tablets. For use the tablets were ignited and the fumes inhaled by the patient. The Council on Pharmacy and Chemistry held that the claims for Spiroicide were unproved and unwarranted and that the routine use of an inexact method for the administration of mercury is detrimental to sound therapy. The Council's rejection of Spiroicide was subsequently fully sustained by the investigation of the inhalation treatment of syphilis carried out by Cole, Gericke and Sollmann. (Jour. A. M. A., Feb. 3, 1923, p. 344.)

Bayer 205.—This is said to be a specific trypanosomid. It is said to have no effect on organisms other than the trypanosomes, even those that are nearly related such as the spirochetes. Most of the work carried out in this country has been carried out with small laboratory animals, but the successful treatment of two human cases of trypanosomiasis is reported. The composition of Bayer 205 is secret, though a hint as to its chemical composition has been discovered which suggests that it is a dye of the naphthalene series. It is hoped that in the near future the exact composition of Bayer 205 will be declared so that scientists will feel justified to carry out controlled experiments with the drug. For the present the preparation is in the experimental stage. (Jour. A. M. A., Feb. 10, 1923, p. 406.)

A Patented Consumption Cure.—The U. S. Patent Office has issued patents for many preparations to be used in medicine for which there has not been the slightest scientific justification. The most recent and most flagrant lack of intelligent patent law administration is to be found in a patent issued to Sergluson and exploited by the Savrite Medical Manufacturing Co., Los Angeles, Cal., for an alleged cure for tuberculosis.

This is the patented cure: Pure olive oil, 1 gallon; squill root, 3 pounds; bitter almonds, $1\frac{1}{4}$ pounds; nettle (the plant except the root), $1\frac{1}{2}$ pounds; red poppy flower petals, 1 pound. These various ingredients are to be mixed, put in a closed container, gradually warmed and left standing for about 72 hours, when the mixture is squeezed, mixed and filtered. The filtrate comprises the "cure." (Jour. A. M. A., Feb. 10, 1923, p. 420.)

The Patent Office a Federal Rip Van Winkle.—No branch of our government is of greater importance to the progress of the country than the Patent Office, provided it is intelligently administered. When the Patent Office is used, however, for an extension of the nostrum business founded on the abuse of patent and trademark laws, it becomes a menace to public health. In 1918 a report of the Committee on Patent Law Revision of the Council on Pharmacy and Chemistry recapitulated the effort made for years by the American Medical Association to bring about patent law reform and detailed some of the cruder forms of Patent Office insufficiency in the granting of patents for medicaments. The issuance recently for a patent on a preposterous mixture of squill root, nettle and red poppy flowers in olive oil as a remedy for tuberculosis is a further illustration of patent office incompetency.

Both common sense and consideration of the health of the public suggests that the patent office should consult the scientific departments of the United States government conversant with medicine and therapeutics in the issuance of patents on medicinal preparations. (Jour. A. M. A., Feb. 10, 1923, p. 405.)

Strychnin and Disturbances of the Vision.—The use of strychnin in the treatment of certain visual disturbances appears to be extensive. Its use in ophthalmology was introduced in 1830. In text-books the claims for the usefulness of the drug in these conditions run from mere assertions regarding the usefulness of the drug in certain eye conditions to statements that it actually increases the acuity and field of vision within an hour after injection of therapeutic doses. Occasionally there is a statement to the effect that the good results from strychnin are due to psychic influences. And now, ninety-two years after its proposed use, experiments have been made to indicate that the latter opinion is probably correct and that strychnin is without action on vision. (Jour. A. M. A., Feb. 10, 1923, p. 406.)

Brown's New Consumption Remedy.—The Postoffice Department has issued a fraud order against B. H. Brown, M.D., of Jacksonville and St. Augustine, Fla., and Brown's Magnolia Remedy Co. For some time Dr. Brown, a negro, has been advertising Dr. Brown's New Consumption Remedy, especially to members of his own race who are afflicted with tuberculosis. In 1917 the federal authorities prosecuted Brown under the Food and Drugs Act, holding that the claims for the preparations were false and fraudulent. Though convicted, he continued making his claims in newspaper advertisements, and in circulars that answered these advertisements. While the Department of Agriculture is helpless to prevent this form of fraud under the provisions of the Food and Drugs Act, the Post Office authorities are able to reach this form of fraud. The Department filed charges against Brown and after hearing the defense issued a fraud order against Magnolia Remedy Co., and E. H. Brown. (Jour. A. M. A., Feb. 17, 1923, p. 495.)

Allen's Goiter Treatment.—At Sheffield, Iowa, the Allen Remedy Co. conducts a mail order business in "Dr. C. J. Allen's Goiter Treatment." The A. M. A. Chemical Laboratory analyzed the Allen nostrum and found it to consist essentially of ferrous iodide and hydrogen iodide

(hydriodic acid) in a colored and flavored syrup. The serious side of the Allen Goiter Remedy Co. business is the indiscriminate sale of the nostrum to those who may be, and are likely to be, suffering from exophthalmic goiter. It is well known that the use of iodine is likely to aggravate this disease and hence it is not surprising that physicians are beginning to report serious results from the use of the Allen preparation. (Jour. A. M. A., Feb. 24, 1923, p. 572.)

Pan-creatin Compound.—Harrower's Pan-creatin Compound, according to the advertising circular, is "an endocrine combination embodying: (1) a specially prepared extract of Islets of Langerhans (pancreas tail), rich in its incretory glycolytic product; (2) an acid extract of the duodenal mucosa containing the pancreatic activator secretion, and (3) a small dose of desiccated calves' tonsil." This formula emphasizes the fact that some of the commercial houses are carrying us back to the days of the shotgun nostrum. It would seem hardly necessary to say that such a combination as Pan-creatin Compound is unscientific, and there appears to be no scientific evidence to warrant the belief that such a combination is of value. Four years ago the Council on Pharmacy and Chemistry published a report on some of the Harrower "pluriglandular" mixtures and gave reasons why such unscientific combinations were not acceptable for New and Non-official Remedies. (Jour. A. M. A., Mar 10, 1923, page 717.)

Prescribing Codein.—Codein is a derivative of opium and hence prescriptions for it come within the purview of the Harrison Narcotic Act, no matter what the individual physician may believe in respect to its habit-forming properties. (Jour. A. M. A., Mar. 31, 1923, page 945.)

Biologic Reactions of Arsphenamin.—The complexity of the physical and chemical properties of arsphenamin probably accounts for the complexity of its biologic reactions resulting from the passage through the body. Among the most disturbing of these reactions are the nitritoid or anaphylactoid symptoms occurring after intravenous injection. The earlier studies of the anaphylactoid reactions from arsphenamin cleared up certain features, but left the underlying causes untouched. The investigations of Jean Oliver and his collaborators lead to the conception that arsphenamin can exist in the colloidal state, temporarily at least, and that the temporariness of this state is essential to anaphylactoid reactions. The investigators find that arsphenamin has a fairly constant agglutinating titer for blood corpuscles. The presence of electrolyte is essential for agglutination. The work suggests that agglutination by arsphenamin occurs during the transition stage from its colloidal into the crystalloidal state in the circulation, and that stabilization in the colloidal state prevents the agglutination. From their work they conclude that there are two phases to the reactions from arsphenamin: (1) the early or physical phase, which is concerned with the physical properties of the agent and results in the corpuscular agglutination with multiple embolism, the outcome being fatal sometimes, and (2) the later or chemical phase that results in parenchymatous degeneration of viscera (kidney and liver), this being due to the action of the arsenic ions in the usual way. (Jour. A. M. A., Mar. 31, 1923, page 920.)

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of March 14, 1923

DR. H. LONGSTREET TAYLOR, Presiding

DR. L. C. BACON gave a report of the end results of a case of carcinoma of the breast.

During March of 1920 I removed by the radical, so-called Halsted, operation, a scirrhous carcinoma of the right breast from a woman aged 57 years. Lymphatic involvement was very extensive; many large glands were found in the axilla, in the subclavicular region, in the triangles of the neck both anterior and posterior to the sterno-mastoid muscle, and they were also prominent in the subscapular region. I, of course, told her family that with so extensive a growth it must already have invaded the mediastinum or other deep areas and that it could not be expected that she would live more than a few months. She was sent to Dr. Schons for x-ray treatment and it might be worthy of note that she was very much prostrated by the several series administered. A reaction with rise of temperature and great exhaustion followed them, and it was with difficulty that she was persuaded to continue. Following this and two months after the operation she developed an abscess of the right lung which persisted for about eight months. Fever, bad heart action and great prostration made operation seem out of the question, but all of this time she continued to cough up large quantities of purulent matter mixed with shreds and bundles of fibrous material. This process finally cleared up with no evidence of a right lung remaining except a small portion of the apex. (I might pause here to state that I have seen several cases develop a serious pleuritic effusion after the Halsted operation but this is the only lung abscess.)

By the end of the first year after her operation she began to regain her strength and increase in flesh until she had regained her normal weight. Her scar was healthy, the right thorax somewhat flat and with very little movement during respiration. The heart had moved to the right, bringing the apex under the left margin of the sternum. The left lung area of resonance seemed to have increased. She became short of breath rather more easily after exertion, and at times had some pain in the region of the heart which would last for a few days and then disappear. Other than these defects and the natural fear of the return of the disease she has enjoyed life for two years, visiting friends, carrying on her home, working in her garden in summer, etc.

The first of this month, March, she contracted an influenza, soon became cyanotic, the heart action became weak and rapid, a hypostatic condition of the lung developed and she died the fourth day.

An autopsy was permitted. No carcinomatous or other growths could be found in the chest or abdomen. Because there had been no cerebral or nerve disturbances the brain and spinal cord were not examined. The abdominal contents appeared normal. The thorax contained a small amount of serous fluid. The right lung was represented by a piece of crackling lung tissue about 2 inches in breadth

by 1.5 inches in height and rather a small mass of scar tissue of about the same dimensions to account for the rest of the lung. The parietal pleura was smooth and apparently healthy; not thickened. The remnant of the right lung was not adherent except for a slender band of fibrous tissue running from it to and through the mediastinal tissues and attaching to the pericardium. While this band had ceased to be inflamed, it will probably account for the occasional attacks of pain which she experienced. The heart was somewhat enlarged, the muscles firm and the valves normal. The left lung showed the conditions usual in hypostasis.

There is much room for speculation in this case and I would be grateful for enlightenment. While we all know that the scirrhous type of carcinoma of the breast is sometimes slow in its progress, in view of the extensive lymphatic involvement and the large size of some of the remote glands I cannot believe that the process had not progressed beyond the field of operation and I must give the x-ray credit for its destruction. What part the x-ray, with its possible destruction of carcinomatous tissue, may have had to do with the lung abscess, I would like to know. What would the reaction following the x-ray treatment mean? Could the x-ray have caused devitalization of lung tissue in the absence of new growth? At no time did the patient suffer with an erythema after the x-ray exposures.

Discussion: DR. DENNIS: Dr. Bacon asked about the possible effects of x-ray. I reported years ago a case of sarcoma of the chest wall which was resected. A year later the woman returned with a mass the size of a hen's egg near the left breast. She was four and one-half months pregnant. I removed the mass in the breast and resected a two-inch piece of the diaphragm. She had a stormy convalescence but is alive and well today. She had repeated x-ray treatments for from one and a half to two years, and with this history of malignant growth with recurrence, it seems that her present freedom from trouble must be ascribed to the x-ray. I think probably there are certain tumors that can be arrested by x-ray or radium, but that most cannot. It depends on the malignancy of the tumor.

In regard to the reaction following the x-ray or radium treatment, that is quite common. Intensive radium or x-ray treatment will cause a certain grade of cell necrosis and the resulting absorption often causes headache and malaise that may last for a number of days.

DR. HENRY L. ULRICH reported a case of bone tumor.

The plates are of a patient 54 years old, male, whose family and personal history are negative. His present illness dates back two years, when he noticed some loss of function of the right shoulder. It started as stiffness, which he thought was rheumatism, and later some pain developed. There is no history of injury of the shoulder or hip that he can remember. The hip started some time last January.

The patient presented on physical examination some atrophy of the shoulder girdle with some loss of function. He was unable to raise the arm above the level of the shoulder. The right chest did not move as well as the left though auscultation and percussion were negative throughout. The heart was negative. Abdomen was negative. Prostate was negative. There was a right inguinal hernia.

The right thigh was much atrophied; he was unable to flex the thigh unless he lifted the knee with both hands. There was some atrophy of the leg muscles. The reflexes were all normal except that the abdominal were absent.

The blood picture was normal except for a mild anemia and slight leucocytosis. The blood chemistry was normal. The blood Wassermann was negative four times in this laboratory, three times at two others, and positive twice at the State Board laboratory.

Three months later the patient presented himself with practically the same findings except that his general health and nutrition seemed improved. A mass was situated on the left thorax in the posterior axillary line, about the size of a small egg, sessile and securely attached to the intercostal fasciæ. There was no pain on palpation or pressure. The mass was visible in the x-ray plate of the chest but the shadow was external to the thoracic cavity. The condition of the shoulder and hip had not changed much in function or appearance except that there was more bulging above and laterally to the hip joint. There seemed to be some swelling along the spinous process of the right scapula. The blood picture at this time was practically like the former one except that the hemoglobin had come down ten per cent.

Our opinion of this pathology, particularly of the hip, suggested at the time of the patient's first appearance that we might be dealing with an osteomalacia. This was based on the fact that the rami of the ischia and of the pubes respectively were pushed in and not fractured, and because we could not find any primary focus of malignancy anywhere.

The second batch of plates, three months after use of cod liver oil and calcification measures, show progress of this process which is evidently a malignancy. At this time we also noticed a second mass at the lower end of the left scapula.

We sent these plates to Dr. Bloodgood for diagnosis. Max Kahn, his roentgenologist, suggests that we are dealing with a central sarcoma, probably giant cell sarcoma of malignant character. Dr. Bloodgood personally thinks we are dealing with a mediastinal tumor or multiple myeloma.

Discussion: DR. COLE: I feel, after looking at the plates, that the most probable thing is metastatic carcinoma. I think it could be differentiated from the x-ray. Sometimes it gives a very positive picture but when it is in the flat bones, as in the ilium, the diagnosis seems to rest between metastatic carcinoma and multiple myeloma. Metastatic carcinoma is much more common and sometimes is not painful. We have had three cases during the last year or fifteen months more multiple than this that gave no history of pain at all. There was some nerve pain, but no bone pain from the lesion itself. It is very difficult to arrive at the primary source of some of these carcinomata. I remember one negro who had general carcinomatosis, with primary symptoms of carcinoma of the back. At autopsy I could not find the primary focus.

DR. HEAD: Did you say there was no Bence-Jones protein in the urine?

DR. ULRICH: That has not been looked for. Dr. Blood-

good suggested that, but I have not yet done so. Of course carcinoma has been considered. The interesting thing about the case is the selective sites, the picking out of two flat bones on the same side and a certain area around the articulations. Of course, we have seen multiple carcinoma of bones but I have never seen one around joints like this, if this is carcinoma.

DR. R. E. FARR gave the following case report. (Motion pictures were taken during and after the operation and were presented.)

J. P. B., age 56, formerly a storekeeper. Entered St. Mary's hospital January 21, 1923.

History: Patient is married, has two children living and well. His general health has always been good with the exception of varicose veins and ulcers of the left leg in 1920. The present trouble began three years ago when he began to cough occasionally and his voice became hoarse and rasping. This condition remained stationary until three months before entering the hospital. He has had some pain in the region of the larynx and has lost twenty pounds in the last year, which he attributes to change in occupation. There is a history of possible encephalitis lethargica three years ago and he dates the beginning of his trouble from this time.

General examination was negative excepting some palpable glands in the left sublingual region.

Examination. Laryngoscopic (Indirect). Shows an ulcerated growth replacing the left vocal cord and arytenoid. There is marked injection and swelling on the left side of the larynx. This was done on January 22nd. (Direct.)

This examination, made the following day, confirmed the findings of the first examination. There was an attempt made to remove a piece of the growth but on account of its being so flat and resistant it was unsuccessful.

Subcutaneous tuberculin tests proved negative, as did the lungs to physical and x-ray examination. At this time the patient's nurse was found to be a diphtheria carrier and the patient was allowed to go home for a few days. Blood Wassermanns were taken and were negative.

Patient re-entered the hospital on February 2, 1923.

First operation. Preliminary mobilization of the larynx and trachea with iodoform packing (Crile). Anesthesia—local infiltration block. A middle incision was made, the thyroid isthmus was divided and the trachea and right side of the larynx were completely isolated with iodoform gauze.

After the first operation the patient developed broncho-pneumonia and became very ill. The incision became infected with streptococci. The patient left the hospital two weeks after the operation and the incision was treated by the Carrel-Dakin method.

He re-entered the hospital March 2, 1923, one month from the time of his first operation. Smears showed from twenty to thirty bacilli to the field. One week later the number of bacilli had been reduced to four to the field.

Second Operation. March 10th. Tracheotomy, Laryngotomy and Laryngectomy. Anesthesia—local subdermal infiltration block. The vertical incision was converted into a T-incision at the top. The trachea and larynx were once more isolated and 2 c.c. of 4 per cent cocain was introduced into the trachea by means of a fine needle.

Tracheotomy: A transverse incision was made half-way through the trachea just below the larynx.

Laryngotomy: The voice box was opened by means of the rib shears, and the growth was found to have destroyed the left vocal cord and to have extended upward towards the epiglottis, having the area of a half-dollar. It was ulcerated and approximately 1 cm. in thickness. It was macroscopically malignant.

Tracheotomy: The trachea was completely divided and sutured to the skin at the substernal notch.

Laryngectomy: Topical applications of cocain were made to the epiglottis and posterior fauces. The larynx was removed, a large catheter introduced through the nose into the esophagus and the wound was closed with chromic gut. A cigarette drain was placed in the upper angle of the wound and another behind the displaced trachea. The skin was closed with silkworm. A tracheotomy tube was introduced.

Post-operative Treatment. The patient was encouraged to move around freely. Moist gauze was placed over the tracheal opening and a basin of water containing tincture of benzoin was placed near the bed and kept steaming continuously. His pulse during the operation remained at 80; his respirations and color remained normal. Since the operation his temperature has ranged between 101 and 103 rectal, and the pulse has remained below 100. There has been no pulmonary involvement and he is now sitting up, this being the fourth day. He is taking large quantities of nourishment through the esophageal catheter. A duodenal tube was substituted for the catheter today.

(Subsequent note by Dr. Farr.)

Pathological report showed chronic inflammation, no malignancy. The great destruction of the larynx, approximately three-fourths of its lining membrane, seemed to be an absolute indication for laryngectomy. Do you think I met the indication?

Discussion: DR. A. SCHWYZER: I just want to say that I believe that is a field where local anesthesia is valuable. If it had been tuberculosis I would imagine it would have been a good idea to make a little separate incision through the skin and draw the trachea out there. After a week or ten days very often when there is tuberculosis, it gets loose and retracts. I have opened the larynx and taken out about half and burned out what I could not remove, and closed it up again after removing the vocal cord.

DR. FARR: I wish to thank Dr. Schwyzer for his discussion. In doing the one-stage operation it is desirable to bring the trachea out through a stab wound in the skin. However, in the two-stage operation this is impossible, as the skin has already been divided to the suprasternal notch. I have operated upon only one tuberculous case and this man died a few days later of broncho-pneumonia.

Frozen sections might have been made in this case. However, with this large tumor there seemed to be nothing to do but to remove the larynx. I am gratified that Dr. Schwyzer concurs with me in my judgment in this regard. The pathological report furnished by Dr. E. T. Bell of the University shows no malignancy, only a chronic inflammation. It is to be noted that this process had completely destroyed the left vocal cord and the anterior attachments of the right and had extended up to the epiglottis.

DR. GEO. DOUGLAS HEAD read a paper entitled "A Clinical Study of Early Diabetes." Several charts were shown.

Discussion: DR. ULRICH: I think Dr. Head makes a very pretty point about the night urine. There is no question that the twenty-four hour specimen may dilute the sugar to such an extent that, if not enough urine is used by the technician, the sugar may not be discovered; by keeping it in concentrated form of course it shows up readily. Some of these curves of blood sugar shown must be of cases of late diabetes, or they are evidence of dietetic or laboratory error. In fact these charts are merely studies of renal threshold. We do not know what sugar tolerance is. Not until we know more about sugar metabolism (that is, the physiology of it) will we be able to speak of a "tolerance." We have been discarding urine examinations practically altogether in our diagnostic methods in these types of cases. We use blood sugar curves. In cases of doubt we try what is called erroneously "glucose tolerance test," which in reality is nothing but reaction curves in the blood to sugar. These curves are quite characteristic in diabetes. Recently Dr. Rigler and I have standardized a technic in which small quantities are injected intravenously with characteristic reaction curves. This method makes the process simple, standard and accurate. Such a technic makes us feel more accurate about our diagnosis as to whether we are dealing with diabetes.

In regard to Dr. Head's clinical classification, I think it is a very striking grouping and extremely worthy of consideration.

DR. CROSS: Dr. Head's paper exemplifies clinical research upon which the future progress of medicine must depend for its progress to a great extent. The actual reaction of the patient, or, better, the group of patients, is the ultimate source of medical knowledge. He has shown in this group a practical study of early diabetics or potential diabetics. The question naturally arises as to whether, aside from diabetes, there may not be temporary disturbances of starch metabolism, due to functional derangement of the pancreas, or some other cause, but which does not tend toward a chronic form of hyperglycemia. Advances are being made in the study of these conditions.

A separate examination of the morning and evening urine is undoubtedly a valuable procedure, and, as has been shown, will detect the presence of sugar which might be absent in single specimens.

The apparent relationship between hyperglycemia and the various bizarre symptoms which Dr. Head has found in some of these individuals is difficult to prove. Until we know more than we do at present about the cause of diabetes we cannot satisfactorily prove such relationships. Tissue starvation does not quite explain it.

Of equal importance with the study of diabetes already present in the early form is the recognition of the potential diabetic or the person who is likely to develop it. The blood sugar curve, under measurable feeding of carbohydrates, furnishes a very satisfactory method of recognizing these individuals. Goetsch and others have shown that the curves of the blood sugar, under given conditions of feeding glucose according to body weight, are capable of rather accurate interpretations. As yet this is the most reliable method of detecting the potential diabetic.

DR. HEAD: I presume that perhaps Dr. Ulrich's point is well taken with relation to some of these cases. The reason I have preferred to present them as cases of diabetes is the fact that not only do the urine and blood studies, as I look upon them, indicate that they are very suspicious cases, but also the fact that they almost without exception responded to dietetic management. That is, the individual who complains of the symptoms described, with a little sugar in the evening specimen of urine and a little hyperglycemia, even though there is arteriosclerosis of the renal vessels, I consider a case of diabetes mellitus if, when his carbohydrate intake is cut down, the symptoms of which he complains disappear. What we are trying to do is to relieve these patients of their aches and pains. That is the reason why I have presented these cases so positively as true cases, either of diabetes mellitus, or potential diabetes. In the vast majority of them, very marked relief has been secured by dietetic management. And curiously enough, instead of responding easily and promptly to dietetic management, as one might expect, I find that is not the case. Some are very persistent and slow in responding, but their symptoms do clear up and usually only when the blood sugar strikes normal.

Personally, I am of the opinion that all of these cases (or at least the vast majority of them) that have been presented were mild or potential forms of diabetes, and, if they had continued to pursue the ordinary course of living, would become diabetics.

DR. H. B. SWEETSER: I would like to ask Dr. Head one question, and that is, in a case in which he finds these indefinite symptoms, i.e., aching, exhaustion, etc., and he suspects that he may be dealing with one of these diabetic cases and finds no sugar at all, is there any way by which he may develop sugar in the urine and arrive at a proper diagnosis?

DR. HEAD: Of course there is a well known method of feeding a patient 200 gms. of glucose with the idea of producing glycosuria in a patient who is unstable with relation to his so-called sugar tolerance. I have never used it in individuals of this type such as I have described tonight. It might be a very valuable thing to do, especially in persons past middle age.

PROGRESS

Abstracts to be submitted to Section Supervisors.

MEDICINE

SUPERVISORS:

F. J. HIRSCHBOECK,
FIDELITY BLDG., DULUTH
THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

THE INFLUENCE OF OLIGURIA ON NITROGEN RETENTION IN THE BLOOD—O. H. Perry Pepper (Amer. Jour. of Med. Sc., January, 1923): The influence of a marked reduction in the daily quantity of urine upon the excretion of nitrogen, and on the nitrogen level in the blood, has not received sufficient attention.

In acute nephritis there may be a decrease in the urinary output, a failure to excrete sodium chlorid, and a moderate rise in the level of the various fractions of the non-protein nitrogen in the blood. In such cases it is not necessarily due to any impairment of the urea-excreting function of the kidney, but may be due solely or in large part to the interference with water elimination, with a nitrogen retention in the blood as a result. It is known that unusual formation of urea may temporarily exceed the kidneys' excreting capacity, and result in an increase in the blood urea, as, for example, in an excessive protein diet, rapid destruction of body protein, as in certain acute infections and intoxications, etc. In rapid dehydration of the body this has also been observed, as, for example, in obstinate vomiting with diarrhea.

Ambard has estimated 5.6 per cent as the maximal concentration for urea in the human urine. MacLeod gives a figure a trifle higher than this, and Cushny a little lower, but the estimate made by Ambard is at least nearly correct. In order for the human body to eliminate the usual level of 30 gm. of urea per day, an excretion of 500 c.c. of urine is necessary with normal kidney function to bring this about.

In acute or chronic nephritis with edema there is constantly a diminution of the amount of urine. If there is complete anuria, urea and the other non-protein nitrogen retention products remain in the body, and yet the kidney's ability to concentrate urea may be entirely unimpaired, the alteration in the blood chemistry being due to a diminished output of water, and the failure of the kidneys normally to concentrate beyond the stated per cent.

Pepper calls attention to the fact that in certain cases of nephritis with some nitrogen retention the phthalein elimination remains high. This may in part be explained by the greater concentration ability of the kidney for the dye, so that while the kidney may be able to excrete a normal percentage of phthalein in a small amount of urine, the rate and volume of urine in the twenty-four hours will be entirely too low for the kidney to secrete all the day's urea.

He adds the observation also that in a so-called urea concentration test the amount of urine passed must be sufficient for the excretion of the urea administered before a definite conclusion can be drawn from the fact as far as the functional efficiency of the kidneys is concerned. He has some doubt also as to the use of any formula or index based on the excretion of urea. Therapeutically the author suggests that when the concentration ability of the kidney is low we carefully avoid passive congestion and body dehydration, so as to permit the kidneys to excrete as much water as possible, that we reduce the protein intake, avoid as much tissue destruction as possible, in order to lower the demands upon the nitrogen excreting function of the kidney.

F. J. HIRSCHBOECK.

THE VIBRATING SENSATION IN DISEASES OF THE NERVOUS SYSTEM—R. T. Williamson (Amer. Jour. of Med. Sc., Nov., 1922): The vibrating sensation is the peculiar vibrating or trembling sensation which is felt when the foot of a large vibrating tuning-fork is placed firmly

in contact with a subcutaneous bony prominence or surface in many parts of the body—the malleoli or the styloid process of the ulna or the sternum for example. The sensation is also sometimes described as bone sensibility or pallesthesia.

In certain diseases of the nervous system affecting motor structure only the vibrating sensation is always felt. Thus I have never found it lost, even at an advanced stage of the disease, in cases of amyotrophic lateral sclerosis, primary lateral sclerosis, progressive muscular atrophy, acute and chronic anterior poliomyelitis (in the infant or adult) and paralysis agitans. Also I have never found it lost in pseudohypertrophic paralysis, idiopathic muscular atrophy, neurasthenia (unassociated with hysteria). Loss of the vibrating sensation would therefore be a strong point against the diagnosis of the affection just named.

The following common combinations of early signs of organic disease are quoted:

1. Loss of the vibrating sensation on the legs, slight incoordination, Babinski reflexes. (Later signs of ataxic paraplegia or combined posterolateral sclerosis or degeneration.)
2. Loss of the vibrating sensation on the legs or on the abdomen and legs or on the abdomen only. Babinski reflexes, loss of abdominal reflexes. (Later signs of disseminated sclerosis.)
3. Girdle pains, often for a long period; then loss of vibrating sensation on the legs, with Babinski reflexes. (Later signs of compression myelitis from tumor of the meninges or vertebrae.)
4. Loss of the vibrating sensation, loss of the tendo-Achillis reflexes, pain in the legs. (Later loss of knee-jerks and other symptoms of peripheral multiple neuritis.)

J. C. MICHAEL

ANEURYSM OF THE HEPATIC ARTERY—Julius Friedenwald and Karl H. Tannenbaum (Amer. Jour. of Med. Sc., January, 1923): Aneurysm of the hepatic artery is an exceedingly uncommon affection, of which a total of 65, the authors state, have been found in the literature. The authors have made a careful study of these 65 cases, have tabulated the clinical data, subjective and objective, the etiology, symptoms, immediate cause of death, and the post-mortem appearance.

They report in detail a case of their own, occurring in their clinic at Baltimore.

The size of the aneurysm varied from that of a barley-corn to a child's head. The extrahepatic type is usually larger than the intrahepatic, and also occurring in predominating numbers, in the proportion of about 3 to 1. Rupture of the aneurysmal sac occurred in 45 of the 65 cases, most commonly into the peritoneal cavity. The disease is more common in males than females, in the proportion of 3 to 1. The age range is from 14 to 83 years, the average age in the 63 cases being 38 years.

Infections play an important part in the etiology, particularly septic endocarditis, typhoid fever, pneumonia and osteomyelitis, with syphilis as a cause relatively infrequently. The most common symptoms are pain, which occurs in 70 per cent of the cases, and varies in intensity and character.

Hemorrhages occurred in 63 per cent. They are often massive, intermittent, recur at irregular intervals, and are usually the immediate cause of death. They take place into the abdominal cavity, into the bile ducts, or into the gastrointestinal tract.

Jaundice has been noted in 64 per cent of the cases, and may be temporary or permanent.

Fever has been noted in 32 per cent, and it may rise as high as 103° or 104° , and usually occurs with pain paroxysms and chills.

Tumor formation is quite characteristic and the mass frequently pulsates.

The diagnosis is exceedingly difficult, as evidenced by the fact that in but 2 cases of the 65 collected was the diagnosis correctly made during life except in those instances in which exploratory incisions were performed. Therapeutically surgery offers the only relief. Kehr was the first to perform an operation with recovery of his patient. Three patients had been operated on previous to this, with fatal results.

The consensus of opinion is that anastomoses of the hepatic artery in the liver tend to occur after a varying period as a result of the aneurysmal condition. This is essential to warrant ligation, with a reasonable hope of establishing a sufficient circulation to keep up the hepatic function. Since Kehr's operation in 1903, 9 others have been performed, with 3 recoveries.

F. J. HIRSCHBOECK,

THE TREATMENT OF NEURO-SYPHILIS—Sir James Purves-Stewart, Senior Physician to the Westminster Hospital (*Brit. Med. Jour.*, Oct. 7, 1922): In this paper the English neurologist discusses comprehensively his general considerations, neuro-relapses, diagnosis, preventive treatment, neurotropic organisms or syphilotropic nervous tissues, varieties of syphilitic lesions in the central nervous system, treatment of the types of neurosyphilis, including the pyrexial; queries monkey serum, spinal drainage and intraspinal, intracisternal and intracranial methods. His conclusions are quoted:

1. Every case of neuro-syphilis, diagnostically established by combined clinical and serological tests, demands assiduous treatment of the general syphilitic infection by every means at our disposal. Antisyphilitic remedies, including mercury, iodides, arsenobenzol, etc., are to be administered by the most efficient route, whether by the mouth, by inunction or fumigation, by intramuscular injection, or by intravenous injection into the blood stream. In no case should our remedies be directed exclusively to the nervous system.

2. In gummatous and meningo-vascular neuro-syphilis the foregoing antisyphilitic treatment is usually all that is necessary.

3. Some cases of parenchymatous syphilis respond, but the majority are resistant, to general antisyphilitic treatment, even when carefully and thoroughly carried out. Such cases are those which should be selected for supplementary subarachnoid treatment, whether intrathecal or intracisternal.

4. Intraspinal treatment by salvarsanized serum prepared from the patient's own blood, or by human or horse

serum mercurialized in vitro, is specially suitable for cases of tabes and of cerebro-syphilis, provided the cerebro-spinal fluid shows evidences of active meningeal reaction. It is also suitable for meningo-vascular spinal syphilis when resistant to ordinary treatment.

5. The direct intraspinal administration of arsenobenzol into the cerebro-spinal fluid is liable to produce acute softening of the spinal cord and should be discarded.

6. Cases of general paralysis, of optic tabes, of tabo-paralysis, and of tabes with negative reactions in the cerebro-spinal fluid, are not likely to benefit by intraspinal treatment.

7. Cases of meningo-vascular cerebral syphilis benefit much by intracisternal administration of salvarsanized serum.

8. General paralysis, if recognized in the early stage, is definitely benefited by intracisternal treatment. This method is superior in efficacy to intraventricular operations and entails much less risk to the patient.

9. Pyrexial treatment of early general paralysis—for example, by tuberculin, nuclein, etc.—may induce temporary remissions in the disease. So also can simple drainage of the cerebro-spinal fluid, combined with general antisyphilitic treatment.

10. Advanced cases of general paralysis, with extensive destruction of cortical nerve elements, are hopeless for curative treatment by any method whatever.

J. C. MICHAEL.

SURGERY

SUPERVISORS:

E. MENDELSSOHN JONES,
LOWRY BLDG., ST. PAUL
VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

TREATMENT OF DIVERTICULI OF THE OESOPHAGUS—C. H. Mayo (*Ann. of Surg.*, vol. 77, p. 267): As treatment for diverticuli of the oesophagus, Bell in 1830 suggested and made an external fistula into the sac. Rokitsky in 1840 described and classified diverticuli of the oesophagus into two types—pulsion and traction diverticuli—which is still used as a pathological basis. It is a disease of adult life and more common than generally realized. The pulsion diverticuli are pushed out from within by violent peristaltic action at the narrowest part of the canal behind the cricoid. The traction type are small and are situated at about the level of the bifurcation of the trachea, and are usually caused by suppuration of the glands. They are rare, being found most often at post mortem and seldom cause clinical symptoms. All pulsion type of diverticuli eventually become surgical on account of increase in the severity of symptoms.

Once the oesophageal muscle is penetrated, the sac gradually enlarges and develops a semi-inflammatory or traumatic thickening of the fibrous coat. While at first in the mid line growing down in front of the spine, they bulge to the sides, usually tending to become larger on the left. The

use of silk thread, first suggested by Mixer of Boston, has been greatly developed by Plummer as a means of a guide in dilating strictures of the oesophagus. Plummer also suggested the use of this thread as a means of estimating the depth of the sac of the diverticuli. The sacs give trouble even when small, but as they become larger, owing to their interference with swallowing they give rise to great emaciation. The author advises the use of local anesthesia in the surgical treatment of these cases, and advises the two stage operation as a safer method, thus avoiding cellulitis and mediastinitis. He reports 82 cases with 3 deaths, with no deaths in the last 30 cases. In the surgical treatment, the sac is easily distinguished because of its lighter color than the surrounding tissues, and because of the small plexus of veins over it. Blunt dissection of the sac has been found the most practical, and experience has shown that the larger intrathoracic sacs should be pulled up before ligation of the pedicle is attempted.

J. P. BOWLER.

INGUINAL HERNIA IN THE MALE—Seward Erdman (Ann. of Surg., vol. 77, p. 171): Erdman, from the New York Hospital, reports 1,093 elective operations for inguinal hernia, of which 52 recurred, or 16.61 per cent; giving a by personal re-examination at the hospital by members of the attending staff which the author emphasizes as essential to an accurate survey of post-operative results. Comprising this number were 665 cases of oblique hernia of which 21 recurred, or 3.15 per cent; 313 cases of direct hernia, of which 52 recurred, or 16.61 per cent; giving a total recurrence of 73 cases, or an average recurrence of 7.46 per cent. Of these cases, 98.6 per cent had recurred within a period of two years, the author concluding that any hernia which had not shown evidence of recurrence within this period could be considered as permanently cured. The operative mortality was 0.32 per cent.

Bilateral hernia occurred once in every four cases; oblique hernia was bilateral in 26 per cent; direct hernia was bilateral in 69.5 per cent; the direct-indirect type was bilateral in 63.4 per cent. In the follow-up of 849 cases, the incidence of bilateral hernia was shown to be 37.4 per cent, including those patients showing hernia on the opposite side at the time of re-examination.

The average age for the direct hernia was 38 years; for the direct-indirect, 38.5 years; and for the oblique hernia, 27.8 years. On a basis of the age incidence, he agrees with Hamilton Russell's theory of the congenital origin of indirect hernia. The Bassinni operation is regarded as that of the greatest general application, and the operation of choice in patients over 20 years of age. He believes the Ferguson method the better for younger patients.

The direct-indirect hernia is discussed as a distinct type, and defined as one in which the sac bulges on both sides of the deep epigastric vessels, that on the medial side usually being the larger. Erdman believes that these are really direct herniæ which have extended laterally, because (1) of the age of the patients in which they occur, (2) they are bilateral in 60 per cent of the cases, (3) if there is a hernia on the opposite side, it is generally direct, (4) they recur in 14 per cent of cases, and the type of repair is essentially the same as the direct type.

A common finding with hernia was a bulging of the muscles of the inguinal region, termed the "Pool bulge." This was seen as a bulge of the muscles parallel to and above Poupart's ligament extending outwards from the lateral border of the rectus towards the crest of the ileum. This was suggested as a muscular weakness, and as such, a possible factor in the production of acquired and also congenital hernia.

From a review of the types of recurrence, it seemed that the vast majority of herniæ recurred in their primary type, and that the method of secondary repair played but little part in the incidence of secondary recurrence. Appendectomy through hernia incision was found to be inadvisable on account of the danger of hemorrhage and infection through inadequate exposure.

Scrotal tumefactions following herniotomy occurred in 48 per cent of the oblique type and 15.2 per cent of the direct type. The period of duration averaged three months, usually followed by spontaneous recovery, and such tumefactions were not considered to be a serious complication of herniotomy. Wound infection occurred as a certain cause of recurrence.

J. P. BOWLER.

GYNECOLOGY AND OBSTETRICS

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PREGNANCY IN THE TUBERCULOUS, WITH REPORT OF 166 CASES—Chas. C. Norris and Douglas P. Murphy (Amer. Jour. of Ob. and Gyn., Dec., 1922): The authors base their report upon a series of 166 cases. In every case the tubercle bacilli were definitely demonstrated and each case was followed at least 3 months after labor, some longer. Of the 166 cases of pregnant women with pulmonary tuberculosis, 68 were in the first stage of their pulmonary disease, 79 in the second stage and 19 in the third stage. Of the 68 presenting signs of tuberculosis in the first stage 18 were improved 3 months after labor, 29 showed no change, 20 cases were considered to be worse and 1 had died. Of the 79 second stage tuberculous, 3 months after labor 11 had improved, 35 showed no change, 34 were worse and 3 were dead. Three months after labor in the 19 third stage cases, 1 improved, 2 were stationary, 10 were worse and 6 dead. In the 166 cases therapeutic abortion was done 7 times, spontaneous premature labor occurred 4 times and spontaneous abortion (miscarriage) 6 times. Four infants were stillborn, 28 were dead and 120 were alive at the end of 3 months. The infant mortality was 18 per cent. The maternal mortality was 6 per cent. In 166 cases of pregnancy complicated by pulmonary tuberculosis in all stages 38 per cent were definitely made worse, 37 per cent exhibited no change, and 18 per cent were improved 3 months after labor.

From the study of these cases the authors emphasize individualizing the patient. Generally speaking, laryngeal involvement, hemorrhage, night sweats, loss of weight, lack of vigor are ill omens. Prior to the fifth month in cases indicating activity of the disease, they advise emptying the uterus. After the fifth month expectant treatment is advised.

F. C. GREAVES.

IS INTERFERENCE JUSTIFIABLE AFTER TWENTY-FOUR HOURS OF LABOR WHEN NO OTHER INDICATION IS PRESENT—Alfred C. Beck, M.D. (*Amer. Jour. of Ob. and Gyn.*, Dec., 1922): The sense of security afforded by using the two-flap low cesarean section following a test of labor, has prompted Beck to resort to a more thorough test of labor when relative disproportion exists. Accordingly he abandoned the old procedures advised as prophylaxis against prolonged and difficult labors. The size of the child, the danger of allowing a pregnancy to continue overtime were disregarded. Occiputs-posteriors were treated expectantly and no dilatation was done in dry labors. No interference was attempted until there had been at least two hours of good hard second stage pains. Care was taken to avoid fatigue. As soon as the graphic record showed a weakening in the strength or in the frequency of the uterine contractions, morphine in sufficient amounts to stop labor was given and the patient was allowed to sleep. If, upon rupture of the membranes, the cervix was almost dilated a snug abdominal binder was adjusted and voluntary efforts encouraged. In 1,138 service cases 79 were prolonged labors. In the 79 cases there were 3 stillbirths, 3 deaths of infants under 14 days and 1 maternal death. In the 1,138 cases there were 21 stillbirths, 21 deaths of infants under 14 days and 2 maternal deaths.

F. C. GREAVES.

ROENTGENOLOGY

SUPERVISORS:

C. U. DESJARDINS,
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RESULTS IN THE TREATMENT OF TUBERCULOUS LYMPHADENITIS BY X-RAYS AT LUND, FROM 1908 TO 1918—Institute of Radiology at the University of Lund, Sweden, Hans Edling (*Acta Radiologica*, Vol. I, Fasc. IV, p. 455, Aug., 1922): At the commencement of the period indicated, surgery was the generally accepted form of local treatment of tuberculous lymphadenitis; radical extirpation being favored in contrast to conservative interventions such as curettage, puncture with injection of antiseptics such as emulsion of iodoform-zinc chloride, etc. In 1908, operations on tuberculous glands made up 7 per cent of our total operations at Lund—a number exceeded only by operations on the appendix and for hernias. In 1918, the number had fallen to about 1 per cent, due to the rapid development of radiotherapy in this field.

The method of treatment first used at Lund was a modifi-

cation of the technique of Kienbock (called the expeditive method). An ordinary diagnostic tube with about 12-15 cm. parallel spark-gap and a focal distance of 24 cm. was used with leather, rubber or tinfoil filtration. The doses were calibrated by the Sabouraud radiometer. In cases of adenitis, heavy doses were never used, a superficial dose of 2-4 H. being given as a rule and repeated at intervals of 1 week to 15 days. All the involved areas were exposed at one sitting and only in very large tumors was the cross-fire method, recommended by Kienbock, employed. The methods of reducing skin sensitiveness by pressure anemia, according to the method of G. Schwartz and advocated by many authors, or of provoking a hyperemia in the glands by means of diathermy or Bier's stasis, were not employed.

In 1913 the idea of deep therapy was introduced by the school of Freiburg. By 1915 the author, after gradually modifying his methods in conformity with their views, adopted the technique which he has used since then. Filtration was increased to 3 or even 4 mm. al, with a secondary filter of cotton or leather. The focal distance of the tube was reduced to 18-20 cm. Relatively moderate doses have always been used in the treatment of lymphomas—only rarely surpassing 5 H. units for adults, for infants usually 2 or 3 H. Disson of Heidelberg is using, with a filter of $\frac{1}{2}$ mm. zn. and a spark gap of 35-45 cm., doses similar to those used in malignant conditions. With 3 mm. al. he recommends doses of 30 to 40 H. and claims complete disappearance of even old resistant masses with fistulæ. Similar results are reported by Rapp with doses a little more moderate. Since this work has been only recently undertaken, it has seemed wiser to await later results of this technique.

The possibility of therapeutic results with x-rays depends on the fact that the lymphatic tissue and granulation tissue characteristic of tuberculosis are more susceptible to roentgen rays than the skin and subcutaneous tissue. Even caseous masses according to Isetin can be reabsorbed slowly. As shown by Krall, the bacteria within the tumor are unaffected. This fact accounts for recurrences in cases apparently entirely healed. As a rule the bacteria are rendered innocuous through the alteration of conditions necessary for their growth. During the treatments, due to an indirect action upon the organism, a general amelioration of condition is usually experienced, provided the body has not previously been enfeebled to a stage of being unable to react, as from a coexisting pulmonary tuberculosis, in which cases local treatment of a lymphadenitis is useless.

The author divides his cases according to three stages of the disease. In the first stage one finds simple hyperplasia of the node; in the second stage there are large matted plaques of glands with periadenitis. The third stage is characterized by suppuration and fistulæ and finally extension to the skin.

The average length of treatment in the first group has been $6\frac{1}{2}$ months—in the second group, 8 months. In the third group radiotherapy is usually combined with minor surgical procedure, as aspiration through healthy skin where suppuration is imminent, or, where a fistulous tract exists, repeated curettage. The wounds after irradiation usually heal quickly, and the resulting scars compare favorably with scars following surgical procedure alone.

This group of cases, which is acknowledged the most difficult type of case from a surgical standpoint, shows with radiotherapy the greatest percentage of cures. The average length of treatment has been 8 to 10 months. The results of treatment are shown in the following table:

	Total	Cases Healed	Improved	Recurrent	Dead
Group 1..	70	49 or 70 %	14 or 20 %	3 or 4.3%	4 or 5.7%
Group 2..	32	18 or 56.2%	9 or 28 %	2 or 6.2%	3 or 9.4%
Group 3..	104	88 or 84.6%	6 or 5.8%	9 or 8.6%	1 or 1 %

In comparing these results with those of surgical treatment, the statistics of Blos at Heidelberg based on 745 cases from 11 Clinics were used. After 6 years there were 54 per cent of cures, 28 per cent of recurring cases and 18 per cent of deaths. In the years 1909 to 1914 when radiotherapy was characterized by poor technique and irregular treatment, the cases so treated show 77 per cent definite cures, 20 per cent of cases improved and 30 per cent deaths. Radiotherapy, however, is not without its peculiar risks experienced in the occurrence of secondary skin lesions from over-exposure. The long duration of the treatment is a disadvantage, although the average patient may continue at his occupation during the same time. In conclusion the author refers to the experience of the Danish Clinics where baths of electric lights are combined with x-ray therapy with very beneficial results.

A. U. DESJARDINS.

RESULTS IN THE TREATMENT OF HEMORRHAGES AT THE MENOPAUSE WITH RADIOTHERAPY AT THE CLINIC OF RADIUM—James Heyman, Clinic de Radium of Stockholm (*Acta Radiologica*, Vol. I, fasc. 4, page 470, 1922): In many fields of gynecology, radiotherapy has had a revolutionary effect; in none, more than in the treatment of hemorrhages at the menopause. The preeminent place of radiotherapy in the treatment of these hemorrhagic conditions is generally admitted, but there is still some discussion in regard to questions of technique or whether radium or x-rays give the best results.

The cases, here reported, were treated with radium only; the number treated by x-rays is still too limited for comparison. Of 57 cases treated between 1916 and 1920, 86.5 per cent have been over 40 years of age. The remaining 7 (13.5 per cent) were, with one exception, between 35 and 40 years.

Five cases have not been seen subsequently. Of the 52 remaining cases—40 had previously submitted to curettage, 21 having had 2 or 3 or even 4 curettements and continued to bleed after the treatment. Six of the remaining 12 were treated medically with varying periods of rest in bed. In six cases no previous treatment had been given. The results of the treatment in the 52 cases were:

Amenorrhea in.....	32 cases	92.2%
Oligomenorrhea in.....	16 cases	
Failures in.....	4 cases	7.7%

Among the four cases reported as failures, one was found to be a hemophilia. A second was treated vigorously as though for cancer, because of a suspicious curettement, with good results. A third was operated for a cystic ovary. In the fourth case after two radium treatments and a year of oligomenorrhea, renewed and severe hemorrhage necessi-

tated abdominal hysterectomy. Concerning the number of treatments:

42 cases received 1 treatment	80.8%
8 cases received 2 treatments.....	15.4%
2 cases received 3 treatments.....	3.8%

We have used two different methods of treatment, the first being the intrauterine application, with strict asepsis, introducing three tubes of radium (40 mgr. Ra. Br.—19 mgr. Ra. element) in tandem in a rubber container into the uterus, with dilatation when required. The tubes, the walls of which correspond to 1 mm. of lead filter, remained in place 16 to 20 hours (304-380 mgr. hours. Ra. element).

In the second method of vaginal application, the filter was of 3 mm. Pb. and the dose increased (1100 to 1700 mgr. hours. Ra. element).

The results of the two methods have been almost identical. Neither method has provoked any complications. When dilatation was required, the intrauterine application caused the patient more pain. This was too slight, however, to give either method absolute preference. The possibility of giving a more exact dosage, offered by the intrauterine method, seemed to the author the essential point in its favor. It is certain that the distance from the center of the cavity of the uterus to the ovaries is more constant than from the cul-de-sac of the vagina to the ovaries. On theoretical grounds, it has been thought that x-rays permit more exact measurement of a castration dose because of less variable factors. The author does not agree with this point of view and considers radium therapy, from the point of view of technique, so simple and sufficiently exact in its results as to compare favorably with x-ray treatments.

By either method we should be able to assure the patient relief from the hemorrhages, and the symptoms of the artificial menopause following are not more severe than those of the physiological menopause.

A. U. DESJARDINS.

THE ROENTGEN TREATMENT OF BRAIN TUMORS—S. Nordentoft (*Acta Radiologica*, Stockholm, Sweden, Aug., 1922, Vol. 1, fasc. 4, No. 4, page 418): This is a report on the subsequent progress of 18 previously reported cases. Not more than half of the patients treated were still living at the end of 4 years. In 7 cases roentgen treatment was without effect or only partially effective, and these patients have all died. In 2 the diagnosis was doubtful and future developments showed that they were not tumors. Of the 9 surviving cases one is omitted because of doubtful diagnosis. The remaining 8 cases are all living from 3½ to 6½ years following treatment, essentially in the same condition as first reported, and no recurrence has taken place.

The evaluation of radiotherapy in this extremely serious condition is difficult, because it will never be possible in a single case to definitely prove that it really was a case of brain tumor cured by the roentgen rays. The reason for this lies in the imperfection of neurological diagnosis. In neurological language the conception of tumor means a localized, space-filling something of a different nature within the cranium, and this may be a solitary tubercle, cystercus, a cyst, a meningitis serosa or a tumor. As a result of this uncertainty the percentage of cures in treated cases will be

considerably reduced beforehand owing to the inclusion of the above conditions among the cases diagnosed tumor cerebri. On the contrary, when a cure is obtained, it constitutes strong, probable proof that there really had been a tumor present, since scarcely any of the above mentioned diseases are influenced by roentgen treatment.

As may be inferred from the above-mentioned facts, not every case of tumor cerebri subjected to roentgen treatment can be cured, and in the favorably influenced cases there will be at times surviving defects, corresponding to such important centers or conduction paths as have been definitely destroyed by the tumor. Since the 8 cases originally reported have progressed so favorably and are still well, it seems as if, in this respect, brain tumors behave much like sarcoma, namely, that when sarcoma has once disappeared, it has not the tendency to recur that cancer has. There is no reason why brain tumors should not offer just as good a field for radiotherapy as malignant tumors elsewhere, particularly since they often seem to belong to those forms that respond well to radiation treatment.

A. U. DESJARDINS.

MEANS OF REDUCING THE SECONDARY RADIATION IN ROENTGEN DIAGNOSIS—Ake Akerland (*Acta Radiologica*, Aug., 1922, Vol. I, fasc. 4, page 486): In order to reduce secondary radiation from the body when submitted to roentgen examination, Buckey introduced in 1912 and 1913 a screening device, which consisted of a squared network of interlacing lead bands placed in line with the path of the rays and converging toward their focus. While effectively reducing the indistinctness due to secondary rays, the screen has the disadvantage of leaving a shadow of the network of lead bands. To avoid this Lotzin suggested several years later a moving screen, but his device apparently was not developed commercially.

Potter of Chicago added many alterations and improvements to the Buckey screen. He showed that no linear, circular or irregularly moving screen of squared mesh could entirely suppress the disturbing net shadow, and substituted a diaphragm of parallel plates or metal strips, which together form a section of a cylinder of about 60 to 70 cm. radius. The plates are placed in line with the rays and converge toward the focal point. During an examination the screen is kept in slow uniform motion about the axis of the cylinder. The Buckey-Potter screen brought about great improvement in the quality of roentgenograms, especially those of the thicker portions of the body. In spite of its many excellent features it has certain disadvantages, e.g., some of the secondary radiation which courses in the plane of the parallel plates is not eliminated; the distance between the object and the plate is great; the apparatus is clumsy and must be used on a special examining table.

In planning a new screen, the author has adopted a flat circular form as requiring the least space. All intersections or interruptions of lead bands must be avoided to secure uniform illumination of the plate. It is evident, then, that the screen must be constructed in the form of a spiral. The device adopted consists of four spirals arising at the center, where they are perpendicular to the plane of the screen, gradually inclining toward the horizontal as they approach the periphery. The four spirals must be exactly

centered and are revolved about this center as an axis of rotation. The screen is manufactured by Jarnh (Stockholm) and a patent has been applied for. In investigating foreign patent rights, the author found that other spiral screen devices had been registered but apparently are not being manufactured nor are they reported in medical roentgen literature.

Werner (Berlin) has two screens, one of a single spiral reinforced by partitions placed radially between neighboring spiral windings; the other having an independent star-formed screen in conjunction with the spiral. Caldwell (New York) used several spirals, but placed their center of rotation away from the center of the plane. All these conditions cause the appearance of screen shadows.

A. U. DESJARDINS.

PEDIATRICS

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CHRONIC INTESTINAL INDIGESTION DURING THE SECOND AND THIRD YEARS OF CHILDHOOD—Lewis Webb Hill (*Boston Med. & Surg. Jour.*, Nov. 30, 1922): This paper is of interest as presenting the viewpoint of the older Boston School.

"Hill's practice in feeding is to begin semisolid food such as oatmeal, farina or zwieback at the eighth or ninth month, with chicken or lamb broth and rice, and apple sauce for constipation. At the end of the first year the child should be taking a quart of whole milk a day, cereal twice a day, soup, orange juice, and apple sauce; and at the fourteenth month, strained vegetables and potato are added. Soft boiled eggs are begun at 16 months, and meat at 2 years.

"For practical purposes, chronic intestinal indigestion may be divided into 2 groups—mild cases, and severe ones. The symptoms and signs of the mild cases are failure to gain, poor color, undigested stools, and abdominal discomfort, with underweight, pallor and prominent abdomen. The trouble is usually due to overfeeding with either starch or fat. In starch cases, the stools are large, mushy, brown, and foul or sour, while in fat cases they are smaller, paler and not foul. On microscopic examination of the stools, the slightest amount of undigested starch is abnormal, while there is normally a not inconsiderable amount of fat present. A study of the diet of the child is very important. The treatment consists simply in reducing the amount of the offending element in the diet. In mild fat cases, it is usually sufficient to omit cream, butter and bacon from the diet. In starch cases potato must be withdrawn, and green vegetables restricted. Rice, jelly, crisp toast, or zwieback may be given. The rest of the diet will consist of milk, eggs and meat. In severe cases, the process is of such duration and severity that serious nutritional damage has resulted. There is extreme impairment of nutri-

tion, with large abdomen, haggard face, loose, inelastic skin, frail and weak extremities; and the stools vary, containing undigested starch and cellulose, or fats, often with a large amount of mucus, and a foul smell. Perhaps the best conception of the cause is that it is brought about by a chronic infection of the contents of the intestine, by organisms which should not be there. This bacterial population lives on the food, and the irritating products set up a chronic inflammatory condition in the mucosa, which hinders digestion and absorption. Therapy consists in reducing or entirely eliminating from the diet the foods or food upon which the microorganisms thrive. Protein is well tolerated, a moderate amount of sugar also, but starch, hardly ever. Fat-free milk forms the basis of the diet, 48 or more ounces per day. Sugar may be given in the form of corn syrup; protein is given in meat, cottage cheese, and casein muffins. The best starch to add is rice jelly or zwieback, and fat is added by giving small amounts of whole milk. Fat-soluble vitamins are given in spinach, egg yolk, or cod-liver oil; and the water-soluble vitamins are contained in the milk given."

It would appear that Hill does not conceive of chronic intestinal indigestion as due to digestive incapacity.

ROOD TAYLOR.

CELIAC DISEASE—Rood Taylor (*Amer. Jour. of Dis. of Child.*, January, 1923): Samuel Gee described celiac disease in 1888. It has never been recognized in a breast-fed infant. In its typical form it is always chronic. The children suffering with it are undersize and underweight. The abdomen is distended. The stools are voluminous, gray, greenish or brown, containing much mucus and at times being liquid. They are usually foul and rancid. The rate of metabolism is slightly diminished. There is usually some degree of anemia and the spleen is moderately enlarged. The mental ability of these children is usually far in advance of their physical powers. The most frequent complications are scurvy, tetany, edema and purpura. The necropsy in two typical cases showed no change which could in any way account for the symptoms present. It is thought that the disease results from infection either of the bowel contents or of the intestine with the resultant defect in absorption. Other hypotheses include chronic infection, deficient or defective pancreatic secretion, bile or vitamin deficiency.

In the study of these cases, it would seem that the best way to produce the disease is to feed a susceptible child throughout his second year on a diet rich in milk, fat and potato, and then to subject him to some parenteral infection. The roentgen ray in every case showed a dilated atonic colon. The livers were uniformly small. Free hydrochloric acid was absent in several cases in which the stomach contents were examined.

Up until one year ago, the basis of our diet in these cases was protein milk to which other foods were gradually added. For the past year the author has begun treatment with a solution of Karo corn syrup flavored with orange juice. This was continued for two or three days and then skimmed lactic acid milk to which was added the curd of an equal quantity of skimmed milk, and to this was added 7 per cent of Karo corn syrup. The initial im-

provement was striking; the skin became pink instead of sallow and immediate gain in weight was noticed, and the child improved in every way. These children tolerate more soluble carbohydrate on this diet than they do on the protein milk, following such foods as scraped lean beef, gelatin, flourball porridge, toast, powdered spinach, emulsified cod liver oil, cream and egg yolk were used. Orange and lemon juice was found essential in the dietary treatment.

R. N. ANDREWS.

THE INFLUENCE OF ATROPIN ON THE STOMACH OF INFANTS, WITH SPECIAL REFERENCE TO PYLOROSPASM—Adolph Salomon (*Monatschr. f. Kinderhilk.*, Leipsic, Oct., 1922): The author endeavored to ascertain what cases are amenable to atropin treatment. He first examined the effects of atropin on the stomach of six normal infants, ranging in age from three weeks to three months. The motility of the stomach was first studied by complete evacuation with the stomach tube, and afterwards also with the fluoroscope. Evidence is presented in tabular form that gastric evacuation is retarded after the administration of atropin. Atropin treatment for 24 hours did not decrease the secretion of hydrochloric acid in normal infants. Roentgenoscopically it was found that the tonus of the stomach is considerably decreased after the administration of atropin; the stomach dilates. Peristalsis is slower, and the contractions in the antrum are more superficial. No influence was observed on the pylorus. The favorable results obtained in treating pylorospasm must be interpreted as due to the effect on the gastric musculature and not on the pylorus. In cases which respond to this treatment, the pyloric stenosis seems to be of secondary significance, the principal rôle being played by gastric hypertonia, gastropasm (Thomsen). Large doses of atropin also proved effective in habitual vomiting in neurophatic infants. In one child, 2½ months old, in whom every change of food produced no beneficial effect, a dose of atropin before every bottle stopped vomiting almost completely. When atropin was discontinued after 11 days, vomiting again became intense and frequent, resulting in loss of weight. The vomiting attacks were probably stopped by decreasing the tonus of the wall of the stomach, analogous to observations in pylorospasm. The effect of cocain is to anesthetize the hypersensitive mucous membrane of the stomach; atropin inhibits not only the stimuli starting from the stomach, but also those which may be caused by hyperexcitability of the vagus and by the act of deglutition. Atropin, therefore, has more numerous indications than cocain.

ROOD TAYLOR.

THE TREATMENT OF FLAT WARTS BY THE INTERNAL ADMINISTRATION OF MERCURY—Howard Fox (*Amer. Jour. of Dis. of Child.*, January, 1923): The suggestion of treating flat warts by internal administration of mercury was first made by Dr. Charles J. White in 1915. This treatment was tried on the supposition that warts were caused by some as yet undiscovered protozoan. The author's experience has been confined to eleven cases. The result was entirely satisfactory in five cases and in these the disappearance of the eruption was absolutely complete in from three to eight weeks. There had been no return

of the disease in these patients at the end of three, four, five and seven months and three years, respectively. The treatment consisted solely of the internal administration of mercurous iodid tablets in doses of one-fourth grain, three times a day. Smaller doses were given the younger patients. No local remedies whatever were employed.

The disease in question is often spoken of as *verruca plana juvenilis*. It generally appears on the face and hands, and in men is apt to affect the bearded region. The eruption consists of flat, pinhead sized, or larger, flesh colored, or slightly pinkish yellow, more or less polygonal papules.

From the author's limited experience, there seems to be no doubt that in a certain proportion of cases of flat warts, successful results can be obtained by such a simple procedure as the administration of mercury by mouth for a few weeks. This method of treatment is comparable to the effects of radiation on common warts (*verruca vulgaris*). At times the results of radium or roentgen-ray treatment are brilliant, at other times they are entirely unsuccessful. Flat warts can always be removed by the curet, a method, however, which is not an agreeable one, especially for the average child or young woman. It is also well known that various types of warts may suddenly disappear spontaneously. As the mercury treatment is such a simple one, even though it often fails, it would seem rational to give it a trial before resorting to other less agreeable methods.

R. N. ANDREWS.

THE NEW-BORN CHILD—Herzfeld (Arch. of Ped., November, 1922): The author discusses the peculiarities of the newly-born in respect to weight, temperature and jaundice. His experiences at Riga have convinced him that if there is any period of asphyxia during the expulsion stage, so that the child swallows the mixed vaginal and amniotic fluids, jaundice almost inevitably follows. Decomposition of the lochia is always noted in cases of this kind, although the woman may not show any other signs of morbidity. The vaginal bacteria are not virulent enough to affect the mother, but they induce jaundice when swallowed by the infant; there is almost always slight fever with the jaundice. He treats the infant with jaundice, therefore, with systematic purging and reduces the intake of breast milk, shortening the feedings and allowing only four instead of five. This explanation of icterus neonatorum as a "swallowing jaundice" throws light on the larger proportion of cases among the first-born. It also emphasizes the necessity for clearing out the mouth at once to prevent the swallowing; omitting this, he has had jaundice develop unfailingly. He clears out the mouth by aspiration with a soft catheter, warning against the danger of injuring the mucosa when the mouth is swabbed out with cloth and finger. This does not clear it completely, even at the best. He reiterates in conclusion that the liver is not to blame for icterus neonatorum, and that the more skillful the management of the delivery, the rarer the icterus.

R. N. ANDREWS.

THE RELATION BETWEEN BREAST AND ARTIFICIAL FEEDING AND INFANT MORTALITY—Robert M. Woodbury (Am. Jour. Hyg., Nov., 1922): In the course of studies of infant mortality made in eight American cities, the Children's Bureau obtained information for a large number of infants, including in each case a record of the feeding received in each month of life for the first year. An analysis of the influence of feeding is made upon data for 22,422 live-born infants in these eight cities. The infants are classified according to the feeding received during each month of the first year of life. Such a classification yields a statement of the total number of months lived by infants receiving each type of feeding, and permits taking into account the change in the mortality rate by age, and comparing for each month during the first year of life the relative mortality among infants receiving each type of feeding. The kinds of feeding are classified into three groups, exclusively breast, exclusively artificial, and partly breast and partly artificial feeding. The analysis has shown that artificial feeding, as actually practiced in typical city populations, is associated with a mortality between three and four times as high as the mortality among breast fed infants. This excess mortality is not to be explained by the slight overweighing of the group of artificially fed with infants in certain groups characterized by high mortality rates; and it appears in all nationalities and in all earning groups, though with variations depending probably upon the particular conditions prevailing in the groups.

ROOD TAYLOR.

THE FREQUENCY OF HYPOGALACTIA—Walter Kahn (Deutsch. med. Wchnschr. Leipsic, Oct. 27, 1922): In studies of the nursing capacity of 130 mothers who were admitted to a mothers' and infants' home, and kept under close medical observation, 106 were tested at the end of the eighth week of nursing for the quantity of breast milk. Amounts under 700 gm., were regarded as insufficient. Only 51 mothers (48.1 per cent) yielded enough; 55 (51.9 per cent) did not produce enough milk and in 26 the secretion was much below normal (less than 500 gm.). After 12 weeks there was no marked change, only two women having improved (to over 1,500 gm.).

ROOD TAYLOR.

A CASE OF RENAL DWARFISM WITH BONY CHANGES—D. Paterson (Brit. Jour., Child. Dis., vol. 18, p. 186-188): Paterson's case was of the type known as chronic interstitial nephritis of childhood. In common with the usual case, the principal symptoms were excessive thirst and dwarfism. The unusual feature was the presence of marked bone pathology. There was osteoporosis, enlargements and subluxations of the wrist, and knee joints, and bowing of the femorae. These bony deformities had been present from birth on. Curiously enough Paterson had formerly observed similar deformities in another case of infantile nephritis. In the other case, however, these deformities were first noticed at the age of one year.

ROOD TAYLOR.

THE TOLERANCE OF CHILDREN FOR DIGITALIS—Hugh McCulloch and Wayne A. Rupe (*Southern Med. Jour.*, May, 1922).

This paper is the report of two years' clinical and experimental work. The writers conclude that the method of administering massive doses of digitalis to children should be the same in detail as for adults. The use of massive doses for children is entirely practical, and under proper supervision possesses no source of danger. The amount of digitalis necessary to produce clinical improvement coincides with the amount necessary to produce vomiting and a fall in heart rate. These two phenomena may be taken as criteria that an optimum therapeutic effect has been obtained. Children with heart disease require an amount of digitalis per kilo of body weight which is about 50 per cent greater than would be required for adults.

There are two indications for the use of digitalis in children: (1) those who are suffering from heart disease and who are in a state of chronic cardiac failure; and (2) those who have a regular rapid heart rate when that heart rate cannot be slowed by other measures. Massive doses of digitalis are contraindicated in two groups of children with heart disease: (1) those who have an acute infectious or toxic myocarditis; and (2) those who are suffering from acute cardiac failure with overloaded hearts.

ROOD TAYLOR.

EXPERIMENTAL RICKETS IN RATS—A. F. Hess, L. J. Unger and A. M. Pappenheimer (*Jour. Exp. Med.*, vol., 36, p. 427-446): These experiments showed that rickets producing diets would not cause rickets in rats in the summer if they were exposed to the sun's rays for fifteen minutes daily. Sun rays in the winter required longer than fifteen minutes. The effective sun rays did not penetrate window glass.

Irradiation of a few minutes with the rays of the mercury-vapor lamp suffices to protect rats against rickets. The

length of time needed for protection was shorter with mercury-vapor lamp than for the sun's rays. Pigmentation of the skin lessens the effect of the rays.

ROOD TAYLOR.

A NOTE ON THE SECRETION OF THE CAUSATION OF POSTURAL OR ORTHOSTATIC ALBUMINURIA—F. Parkes Weber (*Brit. Jour., Child. Dis.*, vol. 19, p. 81-84): Orthostatic Albuminuria is most frequently connected with the tall lanky type in which visceroptosis is apt to occur. Lordosis is frequently present. It may occur even after the thirty-fifth year. Parkes Weber offers additional evidence that the cause of this type of albuminuria is a disturbance of circulation causing congestion of the kidney. This may be brought about by pressure on the renal veins, by circulatory disease itself, or by the pressure of enlarged neighboring viscera as the spleen. Parkes Weber also reports two instances of orthostatic albuminuria in patients with congenital heart disease.

ROOD TAYLOR.

A CASE OF MORBILLI BULLOSI—E. Morton (*Brit. Jour., Child. Dis.*, vol., 18, p. 188-191): This name is given to a disease in which an eruption resembling pemphigus is combined with the ordinary rash of measles. Morton's patient gave a history of precedent measles. On the fourth day of the illness, a rash appeared similar to that of measles except that the lesions were raised more than is usual in measles. Twenty-four hours later a bullous eruption developed, beginning on the chest; but rapidly spreading in fresh crops to other parts of the body. In another twenty-four hours the patient was dead.

The writer argues the question as to whether he was dealing with a bullous form of measles or with a combination of measles and pemphigus.

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Annual meeting, December

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Annual meeting in January

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Annual meeting, first Monday in DecemberPresident
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Johnson, Hartland C.	St. Paul	Ogden, B. H.	St. Paul	Van Slyke, Chas. A.	St. Paul
Johnson, T. H.	St. Paul	Ogden, Warner	St. Paul	Vercellini, G.	St. Paul
Jones, E. M.	St. Paul	Ohage, Justus	St. Paul	Von der Weyer, William	St. Paul
Kannary, E. L.	St. Paul	Ohage, Justus, Jr.	St. Paul	Wald, R. H.	St. Paul
Kelly, John V.	St. Paul	Olson, Chas. A.	St. Paul	Wallinga, John H.	St. Paul
Kelly, Paul H.	St. Paul	Ostergren, E. W.	St. Paul	Walters, B. Frank	St. Paul
Kesting, Herman	St. Paul	Pearson, F. R.	St. Paul	Warren, E. L.	St. Paul
King, Walter E.	St. Paul	Pedersen, A. H.	St. Paul	Warner, E. F.	St. Paul
Kistler, A. S.	St. Paul	Perry, C. G.	St. Paul	Warwick, Margaret	St. Paul
Klein, H. N.	St. Paul	Peterson, V. N.	St. Paul	Welch, M. C.	St. Paul
Knauff, M. K.	St. Paul	Pine, Auten A.	St. Paul	Wheeler, M. W.	St. Paul
Kramer, G. B.	St. Paul	Piondke, F. J.	St. Paul	Whitacre, J. C.	St. Paul
Kvitrud, G.	St. Paul	Platt, J. J.	St. Paul	Whitcomb, Ed. H.	St. Paul
Langenderfer, F. V.	St. Paul	Ramsey, W. R.	St. Paul	White, J. S.	St. Paul
Larsen, C. L.	St. Paul	Richards, E. T. F.	St. Paul	Whitmore, F. W.	St. Paul
Larson, M. L.	St. Paul	Richardson, H. E.	St. Paul	Whitney, A. W.	St. Paul
Leavenworth, R. O.	St. Paul	Riggs, C. Eugene	St. Paul	Williams, Clayton	St. Paul
Leahy, B.	St. Paul	Ritchie, H. P.	St. Paul	Winnick, J. B.	St. Paul
Leitch, Archibald	St. Paul	Rogers, F. D.	St. Paul	Wold, K. C.	St. Paul
Lepak, John A.	St. Paul	Rogers, John T.	St. Paul	Wood, H. G.	St. Paul
Lerche, William	St. Paul	Rothrock, J. L.	St. Paul	Ylvisaker, L. S.	St. Paul
Lewis, J. B.	South St. Paul	Rothschild, H. J.	St. Paul	Zander, C. H.	St. Paul
Lewis, W. W.	St. Paul	Roy, Philemon	St. Paul	Zimmerman, H. B.	St. Paul
Lick, C. Louis	St. Paul				

Washington County Medical Society

Regular meetings held on second Tuesday of the odd numbered months

Annual meeting, November

President	Freligh, E. O.	Stillwater	Newman, G. A.	Stillwater
Haines, J. H.	Haines, J. H.	Stillwater	Poirier, J. A.	Forest Lake
Secretary	Humphrey, W. R.	Stillwater	Sherman, C. H.	Marine-on-St. Croix
Landein, F. G.	Johnson, Walfred	Stillwater	Stuhr, J. W.	Stillwater
Brown, A. E.	Kalinoff, D.	Stillwater	Thompson, V. C.	Stillwater
	Landein, F. G.	Stillwater		
	Mingo, F. E.	Hugo		

Chisago-Pine County Medical Society

Regular meetings, midsummer, July or August

Annual meetings, second Tuesday in January

President	Doyle, L. O.	Lindstrom	Kelsey, C. G.	Hinckley
Wiseman, Robert L.	Dredge, H. P.	Sandstone	Paulson, C. W.	North Branch
Secretary	Ehmke, W. C.	Willow River	Stowe, A. J.	Rush City
Gray, Clyde E.	Flom, A. O.	Chisago City	Tilton, A. J.	Alden
Bohling, B. S.	Gray, Clyde E.	Rush City	Wiseman, Robert L.	Pine City
	Gunz, A. W.	Center City	Zeien, Thos.	North Branch

Central Minnesota District Medical Society

Mille Lacs, Sherburne, Isanti and Kanabec Counties

Regular meetings, July and October

Annual meeting, July

President	Cooney, H. C.	Princeton	Swensen, Chas.	Braham
Cooney, H. C.	Parsons, Geo. E.	Elk River	Vik, A. Elliott	Big Lake
Secretary	Roadman, I. M.	Ponsford	Vrooman, F. E.	St. Francis
Parsons, Geo. E.	Shulean, N. S.	Cambridge		

St. Louis County Medical Society

St. Louis, Cook, Lake and Carlton Counties

Regular meetings, second Thursday of each month

Annual meeting, second Thursday in October

President
Parker, Owen W.....Ely
Secretary
Magney, F. H.....Duluth

Abbott, Wm. P.....Duluth
Adams, B. S.....Hibbing
Anderson, Hilding C.....Duluth
Arminen, K. V.....Duluth
Armstrong, E. L.....Duluth
Athens, A. S.....Buhl
Ayers, G. T.....Ely
Bagley, W. R.....Duluth
Barney, L. A.....Duluth
Barrett, Fred.....Gilbert
Bergquist, K. E.....Duluth
Binet, H. E.....Grand Rapids
Blacklock, S. S.....Hibbing
Blakely, C. C.....Barnum
Bouman, P. G.....Duluth
Boyer, S. H.....Duluth
Braden, A. J.....Duluth
Bray, C. W.....Biwabik
Briggs, F. W.....Duluth
Brunet, L. M.....Cloquet
Bullen, F. W.....Hibbing
Burns, H. J.....Duluth
Burns, R. L.....Two Harbors
Carstens, C. F.....Hibbing
Chapman, T. L.....Duluth
Cheney, E. L.....Duluth
Christenson, E. P.....Two Harbors
Clark, F. F.....Duluth
Collins, A. N.....Duluth
Collins, H. C.....Duluth
Cosgrove, F. R.....Proctor
Crosby, J. H.....Duluth
Coventry, W. A.....Duluth
Crowe, J. H.....Virginia
Davis, B. F.....Duluth
Davis, H. S.....Duluth
Doolittle, L. E.....Duluth
Doyle, Geo. C.....Duluth
Drenning, F. C.....Duluth
Durgin, F. L.....Nopeming
Eisenman, W. F.....Chisholm
Ekblad, J. W.....Duluth
Eklund, W. J.....Duluth
Elias, F. J.....Duluth
Eppard, R. M.....Cloquet
Estrem, T. A.....Hibbing
Fahey, E. W.....Duluth
Fleming, J. R.....Cloquet
Forbes, R. S.....Duluth
Frasier, Geo. W.....Duluth

Gauthier, W.Virginia
Gendron, J. F.....Grand Rapids
Gilbert, J. D.....Carlton
Gillispie, N. H.....Duluth
Giroux, A. A.....Duluth
Goodman, C. E.....Virginia
Graham, David.....Duluth
Graham, Reginald.....Duluth
Graham, Robert.....Duluth
Grawn, F. A.....Duluth
Greaves, F. C.....Duluth
Greeley, L. Q.....Duluth
Ground, H. T.....Virginia
Hall, A. E.....Cusson
Haney, C. L.....Duluth
Hayes, M. F.....Nashwauk
Helmark, O. E.....Duluth
Hirschboeck, F. J.....Duluth
Hirschfield, M. S.....Duluth
Hovde, H.....Duluth
Hursch, M. M.....Grand Rapids
Jensen, T. J.....Duluth
Judson, W. E.....Duluth
Kean, N. D.....Coleraine
Keyes, C. R.....Duluth
Kiesling, I. H.....Hibbing
King, Wm. S.....Eveleth
Klein, H.....Duluth
Kohlbray, C. O.....Duluth
Kraft, P.....Duluth
Kuth, J. R.....Duluth
Laird, A. T.....Nopeming
Loofbourrow, E. H.....Keewatin
Lenont, C. B.....Virginia
Lepak, F. J.....Duluth
Litman, Samuel, N.....Meadowlands
Lindgren, E. I.....Duluth
Lum, C. E.....Duluth
Lynam, F.....Duluth
McCarthy, Paul D.....Babbitt
McComb, C. F.....Duluth
McCoy, Mary.....Duluth
McCuen, J. A.....Duluth
McDonald, A. L.....Duluth
McGiffert, E. N.....Duluth
McHaffie, O. L.....Duluth
McIntyre, E. H.....Virginia
Magie, W. H.....Duluth
Magney, F. H.....Duluth
Manley, J. R.....Duluth
Martin, E. T.....Marble
Martin, T. R.....Duluth
Mattill, P. M.....Chisholm
Merriman, L. L.....Duluth
More, C. W.....Eveleth

Morss, C. R.....Zumbrota
Morsman, L. W.....Hibbing
Murray, D. D.....Duluth
Nelson, E. H.....Chisholm
Nicholson, M. A.....Duluth
Olson, Albert E.....Duluth
Oredson, O. A.....Duluth
Pake, S. G.....Duluth
Paradine, J.....Duluth
Pare, L. T.....Duluth
Parker, O. W.....Ely
Payette, C. H.....Duluth
Pennie, D. F.....Duluth
Powers, J. E.....Duluth
Raadquist, C. S.....Hibbing
Raijala, J.....Virginia
Raiter, Franklin W. S.....Cloquet
Reynolds, H.....Hibbing
Rippert, J. A.....Duluth
Rood, D. C.....Hibbing
Robinson, J. M.....Duluth
Rowe, O. W.....Duluth
Rudie, P. S.....Duluth
Ryan, J. W.....Duluth
St. Clair, G. G.....Duluth
Scherer, C. A.....Duluth
Schroder, C. H.....Duluth
Schwartz, A. N.....Duluth
Seashore, D. E.....Duluth
Shapiro, E. Z.....Duluth
Shaw, A. W.....Buhl
Slyfield, F. F.....Duluth
Spicer, F. W.....Duluth
Spurbeck, R. G.....Cloquet
Strathern, M. L.....Gilbert
Strobel, W. G.....Duluth
Stuart, A. B.....Cloquet
Sukeforth, L. A.....Duluth
Sutherland, H. N.....Ely
Taylor, A. C.....Duluth
Taylor, C. W.....Duluth
Tibbetts, M. H.....Duluth
Tildnerquist, D. L.....Duluth
Tuohy, E. L.....Duluth
Turnbull, F. M.....Duluth
Urberg, S. E.....Duluth
Vercellini, C. E.....Duluth
Walker, A. E.....Duluth
Walters, F. R.....Moose Lake
Webber, E. E.....Proctor
Webster, H. E.....Duluth
Weirick, H. E.....Hibbing
Wilkinson, Stella.....Duluth
Winter, J. A.....Duluth
Young, V. A.....Duluth

FOURTH DISTRICT

COUNCILOR, W. H. CONDIT (2 years).....Minneapolis

Hennepin County Medical Society

Regular meetings, first Monday in each month excepting July and August

Annual meeting, first Monday in January

President
Adair, F. L.....Minneapolis
Secretary
La Vake, R. T.....Minneapolis

Abbott, A. W.....Minneapolis
Adair, F. L.....Minneapolis
Alger, E. W.....Minneapolis
Aling, C. P.....Minneapolis
Allen, H. W.....Minneapolis
Allison, R. G.....Minneapolis
Almquist, H. E.....Minneapolis
Anderson, A. E.....Minneapolis
Anderson, Arnt.....Minneapolis
Anderson, D. D.....Minneapolis
Anderson, E. D.....Minneapolis
Anderson, James K.....Oak Terrace
Annis, H. B.....Minneapolis
Arey, H. C.....Excelsior
Aune, Martin.....Minneapolis
Aurand, W. H.....Minneapolis
Aurness, P. A.....Minneapolis
Avery, J. F.....Minneapolis
Aylmer, A. L.....Minneapolis
Baier, Florence.....Minneapolis
Baker, A. T.....Minneapolis
Baker, E. L.....Minneapolis
Baker, Loee.....Minneapolis
Baker, Harry A.....Minneapolis

Bakke, O. H.....Minneapolis
Baldwin, L. B.....Minneapolis
Barber, J. P.....Minneapolis
Barron, Moses.....Minneapolis
Bass, G. W.....Minneapolis
Baxter, S. H.....Minneapolis
Beard, Archie.....Minneapolis
Bedford, E. W.....Minneapolis
Bell, J. W. Jr.....Minneapolis
Bell, J. W. Sr.....Minneapolis
Benedict, E. E.....Minneapolis
Benjamin, A. E.....Minneapolis
Benn, F. G.....Minneapolis
Benson, Geo. E.....Minneapolis
Benson, R. D.....Minneapolis
Bessesen, A. N.....Minneapolis
Bishop, Chas. W.....Minneapolis
Bissell, F. S.....Minneapolis
Blake, James.....Hopkins
Bockman, M. W. H.....Minneapolis
Booth, A. E.....Minneapolis
Boreen, C. A.....Minneapolis
Bouman, H. A. H.....Minneapolis
Bratrud, Arthur F.....Minneapolis
Brooks, Chas. N.....Minneapolis
Brown, E. J.....Minneapolis
Brown, E. D.....Minneapolis
Brown, R. S.....Minneapolis
Bulkley, Kenneth.....Minneapolis

Butler, John.....Minneapolis
Bynes, W. J.....Minneapolis
Cabot, V. S.....Minneapolis
Calkins, L. A.....Minneapolis
Camp, Walter E.....Minneapolis
Campbell, Lowell M.....Minneapolis
Campbell, Robert.....Minneapolis
Carey, Jas. B.....Minneapolis
Cheleen, S. J.....Minneapolis
Cirkler, A. A.....Minneapolis
Clark, Howard S.....Minneapolis
Condit, W. H.....Minneapolis
Cook, H. W.....Minneapolis
Corbett, J. Frank.....Minneapolis
Cosman, E. O.....Minneapolis
Crafts, L. M.....Minneapolis
Cranmer, Richard R.....Minneapolis
Cross, John G.....Minneapolis
Crume Geo. F.....Minneapolis
Curtin, John F.....Minneapolis
Cutts, Geo.....Minneapolis
Dahl, Elmer O.....Minneapolis
Dahl, John A.....Minneapolis
Dahlstrom A. W.....Minneapolis
Daniel, Donald H.....Minneapolis
Dart, L. D.....Minneapolis
Dezell, Earl K.....Minneapolis
Deziel, G.....Minneapolis
Disen, C. F.....Minneapolis

Donaldson, C. A.	Minneapolis	Kistler, A. J.	Minneapolis	Pederson, R. M.	Minneapolis
Dorge, Richard	Minneapolis	Kistler, C. M.	Minneapolis	Peppard, T. A.	Minneapolis
Dornblaser, H. Bright	Minneapolis	Kittelson, Olof	Minneapolis	Perry, Ralph St. John	Minneapolis
Doxey, G. L.	Minneapolis	Knight, R. R.	Minneapolis		Minneapolis
Drake, Chas. R.	Minneapolis	Knight, Ralph T.	Minneapolis	Peters, R. M.	Minneapolis
Dreisbach, N.	Minneapolis	Knight, H. L.	Minneapolis	Petersen, Thorvald	Minneapolis
Dunn, Geo. Robt.	Minneapolis	Koch, John C.	Minneapolis	Peterson, J. R.	Minneapolis
Dunn, Louis	Minneapolis	Kohler, Geo. A.	Minneapolis	Peterson, O. H.	Minneapolis
Dunsmoor, F. A.	Minneapolis	Koller, H. M.	Minneapolis	Pettit, C. W.	Minneapolis
Dutton, C. E.	Minneapolis	Koller, L. R.	Minneapolis	Peyton, Wm. T.	Minneapolis
Egan, John M.	Minneapolis	Kremer, Walter J.	Minneapolis	Phelps, Kenneth A.	Minneapolis
Eggen, O. K.	Minneapolis	Kriedt, Daniel	Minneapolis	Pineo, W. B.	Minneapolis
Eitel, G. G.	Minneapolis	Kucera, Wm. J.	Minneapolis	Poebler, F. T.	Minneapolis
Ellison, D. E.	Minneapolis	Lebowski, Jos. A.	Minneapolis	Pollock, D. K.	Minneapolis
Erb, Fred A.	Minneapolis	Lajole, J. M.	Minneapolis	Poppe, F. H.	Minneapolis
Ericson, John G.	Minneapolis	LaPierre, C. A.	Minneapolis	Pratt, Fred J.	Minneapolis
Everlof, J. L.	Minneapolis	Lane, Laura A.	Minneapolis	Pratt, J. A.	Minneapolis
Fansler, W. A.	Minneapolis	Laurent, A. A.	Minneapolis	Preine, Irvin A.	Minneapolis
Farr, R. E.	Minneapolis	LaVake, R. T.	Minneapolis	Prim, J. A.	Minneapolis
Feidt, W. W.	Minneapolis	Leavitt, H. H.	Minneapolis		Minneapolis
Fjeldstad, C. Alford	Minneapolis	Lee, H. M.	Minneapolis	Quinby, Thos. F.	Minneapolis
Fjellman, R. C.	Minneapolis	Lee, John W.	Minneapolis	Quist, Henry W.	Minneapolis
Fleming, A. S.	Minneapolis	Leland, M. N.	Minneapolis		Minneapolis
Fleming, C. Filmore	Minneapolis	Lemstrom, Jarl	Minneapolis	Ravu, Bjarne	Minneapolis
Flocken, Chas. F.	Minneapolis	Lewis, J. D.	Minneapolis	Reinertson, B. R.	Minneapolis
Fox, John M.	Minneapolis	Lind, C. J.	Minneapolis	Rees, S. P.	Minneapolis
Franzen, H. C.	Minneapolis	Lippman, H. S.	Minneapolis	Rizor, R. I.	Minneapolis
Gammell, J. H.	Minneapolis	Litchfield, John	Minneapolis	Reynolds, J. S.	Minneapolis
Gardner, E. L.	Minneapolis	Litzenberg, J. C.	Minneapolis	Rishmiller, J. H.	Minneapolis
Geist, Emil	Minneapolis	Logefell, Rudolph	Minneapolis	Roan, Carl M.	Minneapolis
Gessler, Paul W.	Minneapolis	Long, Jesse	Minneapolis	Robb, E. F.	Minneapolis
Gordon, G. J.	Minneapolis	Loomis, E. A.	Minneapolis	Roberts, Thos. S.	Minneapolis
Gosin, D. F.	Minneapolis	Lundgren, A. C.	Minneapolis	Roberts, W. B.	Minneapolis
Goss, Harold L.	Minneapolis	Lynch, M. J.	Minneapolis	Robitshek, E. C.	Minneapolis
Grave, Floyd	Minneapolis	Lyng, John	Minneapolis	Rochford, W. E.	Minneapolis
Green, E. K.	Minneapolis	Lysne, Henry	Minneapolis	Rodda, F. C.	Minneapolis
Groll, S.	Minneapolis		Minneapolis	Rodgers, C. L.	Minneapolis
Guilford, H. M.	Minneapolis	McCarthy, Donald	Minneapolis	Rosenwald, R. M.	Minneapolis
Gunderson, Harley J.	Minneapolis	McCartney, Jas. S.	Minneapolis	Rosen, S.	Minneapolis
Gunderson, Nels. A.	Minneapolis	McDaniel, Oriana	Minneapolis	Rose, Paul H.	Minneapolis
Haben, Harold C.	Minneapolis	McDermott, T. E.	Minneapolis	Rypins, Harold	Minneapolis
Hacking, Frank	Minneapolis	McDonald, A. E.	Minneapolis		Minneapolis
Hagen, G. L.	Minneapolis	McDonald, D. A.	Minneapolis	Sawatzky, Wm. A.	Minneapolis
Haggard, G. D.	Minneapolis	McDonald, I. C.	Minneapolis	Schaaf, Fred K.	Minneapolis
Hall, J. M.	Minneapolis	McEachran, A.	Minneapolis	Schefcik, J. F.	Minneapolis
Hallowell, W. H.	Minneapolis	McFarland, Arthur H.	Minneapolis	Scheldrup, N. H.	Minneapolis
Hamel, Arnold L.	Minneapolis		Minneapolis	Schlutz, F. W.	Minneapolis
Hamel, C. E.	Minneapolis	McIntyre, George	Minneapolis	Schmitt, Aaron F.	Minneapolis
Hamilton, A. S.	Minneapolis	McLaughlin, Jas. A.	Minneapolis	Schussler, Otto F.	Minneapolis
Hansen, Erling	Minneapolis	McKinley, C. A.	Minneapolis	Schwytzer, G.	Minneapolis
Hanson, Olga	Minneapolis	McKinney, F. S.	Minneapolis	Seaberg, J. A.	Minneapolis
Hare, E. R.	Minneapolis	McPheeters, H. O.	Minneapolis	Seashore, Gilbert	Minneapolis
Hartig, Hugo J.	Minneapolis	Macnie, John	Minneapolis	Seham, Max	Minneapolis
Harrington, C. D.	Minneapolis	Maguire, Leo	Minneapolis	Sessions, J. C.	Minneapolis
Hartzell, Thos. B.	Minneapolis	Maland, C. O.	Minneapolis	Simons, J. H.	Minneapolis
Haverfield, Addie R.	Minneapolis	Mann, A. T.	Minneapolis	Simpson, Ellery D.	Minneapolis
Hayes, J. M.	Minneapolis	Marclay, W. J.	Minneapolis	Simpson, J. D.	Minneapolis
Head, G. D.	Minneapolis	Mark, D. B.	Minneapolis	Sivertsen, Andrew	Minneapolis
Hearn, Wm. O.	Minneapolis	Mariette, E.	Hopkins	Sivertsen, Ivar	Minneapolis
Hedback, A. E.	Minneapolis	Matchan, Glen R.	Minneapolis	Slocumb, Maude	Minneapolis
Heim, R. R.	Minneapolis	Mathews, Justus	Minneapolis	Smith, Adam M.	Minneapolis
Helk, H. H.	Minneapolis	Maxeiner, Stanley R.	Minneapolis	Smith, Art. E.	Minneapolis
Hendrickson, J. F.	Minneapolis	May, W. H.	Minneapolis	Smith, Homer R.	Minneapolis
Henry, C. E.	Minneapolis	Mead, Marion A.	Minneapolis	Smith, John F.	Minneapolis
Hiebert, J. P.	Minneapolis	Merkert, G. L.	Minneapolis	Smith, Norman M.	Minneapolis
Hiegins, J. H.	Minneapolis	Meyer, E. L.	Minneapolis	Soderlind, A.	Minneapolis
Hill, Eleanor J.	Minneapolis	Michael, J. C.	Minneapolis	Souba, Fred. J.	Minneapolis
Hoagland, Arthur W.	Minneapolis	Michaelson, H. E.	Minneapolis	Spratt, C. N.	Minneapolis
Hobbs, C. A.	Minneapolis	Moir, Wm. W.	Minneapolis	Staples, H. L.	Minneapolis
Hodge, S. V.	Minneapolis	Monahan, J. A.	Minneapolis	Stewart, C. A.	Minneapolis
Holland, A. S.	Minneapolis	Moorehead, M. B.	Minneapolis	Stomel, Joseph	Minneapolis
Holen, T.	Minneapolis	Moren Ed.	Minneapolis	Strachauer, A. C.	Minneapolis
Holm, Geo. A.	Minneapolis	Moriarty, Cecile R.	Minneapolis	Strout, E. S.	Minneapolis
Howe, A. W.	Minneapolis	Morrison, A. W.	Minneapolis	Strout, G. Elmer	Minneapolis
Huenekens, E. J.	Minneapolis	Morse, John H.	Minneapolis	Stuhr, Henry C.	Minneapolis
Hughes, L. D.	Minneapolis	Morton, H. McI.	Minneapolis	Sundt, M.	Minneapolis
Hvoslef, Jakob	Minneapolis	Murphy, I. J.	Minneapolis	Sweetser, H. B.	Minneapolis
Hynes, John E.	Minneapolis	Murray, Wm. R.	Minneapolis	Sweetser, Theo.	Minneapolis
Hynes, John E.	Minneapolis	Myers, J. A.	Minneapolis	Sweitzer, S. E.	Minneapolis
Ikeda, Kano	Minneapolis		Minneapolis	Swendseen, Carl G.	Minneapolis
Irvine, H. G.	Minneapolis	Nathanson, M. H.	Minneapolis		Minneapolis
Jarvis, B. W.	Minneapolis	Nelson, C. P.	Owatonna	Taft, J. O.	Minneapolis
Jensen, Louis C.	Minneapolis	Nelson, H. S.	Minneapolis	Taft, Walter L.	Minneapolis
Jensen, M. J.	Minneapolis	Nelson, O. E.	Minneapolis	Tanner, Alvin C.	Minneapolis
Joannides, Minas	Minneapolis	Newhart, Horace	Minneapolis	Taylor, Rood	Minneapolis
Johnson, A. E.	Minneapolis	Nippert, L. A.	Minneapolis	Tennyson, Theo.	Minneapolis
Johnson, A. Elof	Minneapolis	Noonan, Dan F.	Minneapolis	Thomas, D. O.	Minneapolis
Johnson, James A.	Minneapolis	Nootnagel, C. F.	Minneapolis	Thomas, Geo. E.	Minneapolis
Johnson, Julius	Minneapolis	Noran, A. N.	Minneapolis	Thomas, Geo. H.	Minneapolis
Johnson, Nimrod A.	Minneapolis	Nordin, G. T.	Minneapolis	Thomas, Gilbert J.	Minneapolis
Johnson, Odin J.	Minneapolis	Nordland, Martin	Minneapolis	Thomas, Herb. H.	Minneapolis
Jones, H. W.	Minneapolis	Noth, H. W.	Minneapolis	Tingdale, A. C.	Minneapolis
Jones, W. A.	Minneapolis		Minneapolis	Towers, F. E.	Minneapolis
Kennedy, C. C.	Minneapolis	Oberg, C. M.	Minneapolis	Turnaciff, D. D.	Minneapolis
Kennedy, Jane F.	Minneapolis	O'Donnell, J. E.	Minneapolis	Tyrrell, C. C.	Minneapolis
Kennedy, R. R.	Minneapolis	Olson, Frederick A.	Minneapolis		Minneapolis
Kennedy, W. A.	Minneapolis	Olson, G. M.	Minneapolis	Ulrich, Henry L.	Minneapolis
Kerrick, Stanley E.	Minneapolis	Olson, Olaf A.	Minneapolis	Ulrich, Mabel S.	Minneapolis
Kimball, H. H.	Minneapolis	Olson, R. G.	Minneapolis	Udine, Clyde A.	Minneapolis
King, E. A.	Minneapolis	Orton, H. N.	Minneapolis		Minneapolis
King, W. R.	Minneapolis	Owre, Oscar	Minneapolis	Voyer, Emile O.	Minneapolis
Kinsella, Thos. J.	Minneapolis	Parks, A. H.	Minneapolis	Waldron, C. W.	Minneapolis
Kirmse, Geo. W.	Minneapolis	Patterson, W. E.	Minneapolis	Wanous, E. Z.	Minneapolis
		Paulson, E. L.	Minneapolis	Ward, A. W.	Minneapolis
		Pederson, Harold	Minneapolis	Ward, Percy	Minneapolis
				Warham, T. T.	Minneapolis
				Watson, C. W.	Minneapolis

Watson, J. A.Minneapolis
 Webb, R. C.Minneapolis
 Weisman, Sam.Minneapolis
 Welles, H. J.Minneapolis
 Weston, C. G.Minneapolis
 Wethall, A. G.Minneapolis
 Weum, T. W.Minneapolis
 Whetstone, MaryMinneapolis
 White, S. Marx.Minneapolis
 White, Willard D.Minneapolis

Wilcox, Archa, E.Minneapolis
 Wilcox, M. Russell.Minneapolis
 Willcutt, ClarenceMinneapolis
 Williams, RobertMinneapolis
 Willson, Hugh S.Minneapolis
 Witham, C. A.Minneapolis
 Wittich, F. W.Minneapolis
 Wohlrabe, A. A.Minneapolis
 Wood, Douglas F.Minneapolis
 Woodard, F. R.Minneapolis

Woodworth, Elizab.Minneapolis
 Wright, C. B.Minneapolis
 Wright, C. D.Minneapolis
 Wright, F. R.Minneapolis
 Wyatt, O. S.Minneapolis
 Wynne, H. M. N.Minneapolis
 Yoerg, O. W.Minneapolis
 Zaworski, E. A.Minneapolis
 Zierold, A. A.Minneapolis
 Ziskin, Thos.Minneapolis

Wright County Medical Society

Regular meetings, first Tuesday after first Monday quarterly

Annual meeting, October

President
 Shrader, E. E.Watertown
 Secretary
 Catlin, John J.Buffalo

Catlin, John J.Buffalo
 Ellison, FrankMonticello
 Freed, O. J. R.Cokato
 Harriman, L.Howard Lake
 Hawkins, E. P.Montrose
 Moffatt, A. G.Howard Lake

Phillips, A. E.Delano
 Ridgway, A. M.Annandale
 Rousseau, VictorMaple Lake
 Roholt, C. L.Waverly
 Shrader, E. E.Watertown
 Werner, O. S.South Haven

Meeker County Medical Society

Annual meeting, December

President
 Sturre, J. H.Watkins
 Secretary
 Danielson, K. A.Litchfield

Brigham, FrankWatkins
 Cutts, G. A. C.Litchfield
 Danielson, K. A.Litchfield
 Dulude, S.Dassel
 French, H. S.Grove City

O'Connor, D. C.Eden Valley
 Peterson, AlfredDassel
 Robertson, A. W.Litchfield
 Robertson, W. P.Litchfield
 Sturre, J. R.Watkins

Stearns-Benton County Medical Society

Regular meetings, third Thursday in January, April, July and October

Annual meeting, third Thursday in April

President
 Watson, TolbertAlbany
 Secretary
 Libert, J. N.St. Cloud
 Ausman, Carl F.Paynesville
 Beebe, W. L.St. Cloud
 Beaty, James H.St. Cloud
 Boehm, John C.St. Cloud
 Brigham, C. F.St. Cloud
 Clark, Harry B.St. Cloud
 Du Bois, Julian A.Sauk Center
 Du Bois, Julian F.Sauk Center
 Freeman, W. L.Foley

Friesleben, Wm.Sauk Rapids
 Gulde, W. C.St. Cloud
 Hempstead, WernerSt. Cloud
 Holdridge, G. A.Foley
 Kern, M. J.St. Cloud
 Kingsbury, E. M.Clearwater
 Kohler, D. W.St. Joseph
 Kuhlman, Aug.Melrose
 Lewis, E. J.Sauk Center
 Lewis, C. B.St. Cloud
 Libert, J. N.St. Cloud
 McDowell, J. P.St. Cloud
 May, C. E.Masonic Temple, Minneapolis
 Meyer, A. A.Melrose

Moynihan, And. F.Sauk Center
 McKibben, H. E.St. Cloud
 Pfaff, E. K.Richmond
 Pilon, P. C.Paynesville
 Putney, George E.Paynesville
 Rathbun, A. M.Rice
 Rathbun, C. A.Sauk Rapids
 Rice, G. D.St. Cloud
 Ridgeway, Alex.Belgrade
 Richter, E. H.Hunter, N. D.
 Sherwood, G. E.Kimball
 Sutton, Chas. S.St. Cloud
 Sweetman, R. H.Sauk Center
 Watson, Tolbert.Albany
 Wolner, Oscar H.Gilbert

Kandiyohi-Swift County Medical Society

Regular meetings, first Thursday in March, June, September and December

Annual meeting, first Thursday in December

President
 Jacobs, Jno. C.Willmar
 Secretary
 Scofield, C. L.Benson
 Anderson, R. E.Willmar

Benson, I. S.Willmar
 Branton, A. F.Willmar
 Branton, B. J.Willmar
 Daignault, O.Benson
 Davison, P. C.Willmar
 Dawswell, W. J.Benson
 Freeman, George H.Willmar

Frost, E. H.Willmar
 Hanson, H. V.Willmar
 Jacobs, Jno. C.Willmar
 Johnson, H.Kerkhoven
 Kolset, Carl D.Benson
 Rains, John M.Willmar
 Scofield, C. L.Benson

FIFTH DISTRICT

COUNCILOR, H. M. WORKMAN (3 years)Tracy

Camp Release District Medical Society

Renville, Chippewa, Lac Qui Parle, Yellow Medicine and Sibley Counties

Regular meetings, fourth Thursday in January, April, July and October

Annual meeting, fourth Thursday in October

President
 Adams, R. C.Bird Island
 Secretary
 Peterson, H. E.Granite Falls
 Adams, R. C.Bird Island
 Aldrich, F. H.Belview
 Bacon, R. S.Montevideo
 Barfield, J. J.Granite Falls
 Bergh, L. N.Montevideo
 Brand, W. A.Redwood Falls
 Burns, M. A.Milan
 Bushey, M. E.Arlington
 Clay, E. M.Renville

Cole, H. B.Redwood Falls
 Crandall, A. M.Madison
 Cress, E. E.Boyd
 Eisengraeber, G. A.Granite Falls
 Englehart, P. C.Wood Lake
 Ferguson, J. B.St. Paul
 Flinn, B. P.Redwood Falls
 Flinn, T. E.Redwood Falls
 Frisch, Frank P.Gibson
 Gaines, E. C.Buffalo Lake
 Guyer, L. G.St. Paul
 Hauge, M. M.Clarkfield
 Holmberg, L. J.Canby
 Johnson, C. M.Dawson
 Johnson, H. M.Dawson
 Jones, R. N.Gaylord

Lee, W. N.Madison
 Lima, LudvigMontevideo
 Mesker, G. H.Olivia
 Nelson, N. A.Dawson
 Olson, W. P.Gaylord
 Passer, A. A.Olivia
 Penhall, F. W.Morton
 Peterson, H. E.Granite Falls
 Puffer, F. L.Bird Island
 Selle, Fred.Winthrop
 Sherman, H. T.Franklin
 Smith, L. G.Montevideo
 Stemsrud, A. A.Dawson
 Walker, G. H.Minneapolis
 Westby, N.Madison
 Zimbeck, R. D.Maynard

Redwood-Brown County Medical Society

Annual meeting, June

President
Jamieson, EarlWalnut Grove
Secretary
Meierding, Wm. A.....Springfield

Adams, J. L.Morgan
Borgeson, Egbert.....Hanska
Cosgriff, J. A.Lamberton
Dubbe, F. H.New Ulm
Eckstein, A. W.Comfrey
Ekelund, C. F.New Ulm
Fritsche, A.New Ulm

Fritsche, L. A.New Ulm
Gray, F. D.Marshall
Hammermeister, Theo. F.New Ulm
Haskins, J. L.Northfield
Jamieson, EarlWalnut Grove
Juergens, H. M.Sanborn
Kiefer, M. A.Sleepy Eye
Meierding, Wm. A.....Springfield
Pelant, F. J.New Ulm
Peterson, R. A.Vesta
Reinecke, George F.New Ulm

Rothenburg, J. C.Springfield
Schoch, J. L.New Ulm
Seifert, Otto J.New Ulm
Shrader, J. S.Springfield
Strickler, A. F.Sleepy Eye
Strickler, MarySleepy Eye
Strickler, O. C.New Ulm
Vogel, Jos. H.New Ulm
Vogel, M. A.Minneapolis
Walker, C. C.Raymond
Weiser, Geo. B.New Ulm
Wellcome, J. W. B.Sleepy Eye

Lyon-Lincoln County Medical Society

Regular meetings, first Tuesday in March, May and July
Annual meeting, October

President
Robertson, J. B.Cottonwood
Secretary
Workman, H. M.Tracy
Akester, Ward.Marshall
Bossingham, O. N.Lake Benton

Engh, SigfredCottonwood
Germo, Chas.Balaton
Hoidale, A. D.Tracy
Jacobsen, David J.Russell
Jacquot, G. L.Tyler
Jensen, J. C.Hendricks
Persons, C. E.Marshall

Robertson, J. B.Cottonwood
Sanderson, E. T.Minneota
Thordarson, Theo.Minneota
Vadheim, A. L.Tyler
Valentine, W. H.Tracy
Workman, H. M.Tracy
Workman, W. G.Tracy

SIXTH DISTRICT

COUNCILOR, F. R. WEISER (1 year)Windom

Southwestern Minnesota Medical Society

Pipestone, Rock, Murray, Nobles, Cottonwood, Jackson Counties
Regular meetings, May and October
Annual meeting, October

President
Metcalf, F. W.Fulda
Secretary
Piper, Wm. A.Mountain Lake

Arnold, E. W.Adrian
Balcom, G. G.Lake Wilson
Bong, J. H.Jasper
Brown, A. H.Pipestone
Chadbourne, A. G.Heron Lake
Cress, P. J.Ellsworth
De Boer, Herman.Edgerton
Ditmeier, L. M. Gerber.Jasper
Dolan, C. P.Worthington
Doms, H. C.Slayton
Doms, Wm.Woodstock
Dudley, J. H.Windom

Golden, C. M.Tyler
Halleran, WalterJackson
Hilger, J. M.Iona
Hitchings, W. S.Lakefield
Johnson, EllsworthWindom
Keeling, F. L.Lakefield
Leigh, H. J.Lakefield
Lowe, Thos.Pipestone
Lowe, Thos. A.Slayton
McCrea, Jas.Fulda
McKeown, E. G.Pipestone
Manson, F. M.Worthington
May, C. C.Adrian
Metcalf, F. W.Fulda
Mork, B. O.Worthington
Nusbaum, W. H.Jackson
Patterson, W. E.Westbrook
Piper, Wm. A.Mountain Lake

Portman, W. C.Jackson
Richardson, W. E.Pipestone
Richmond, Chas. D.Jeffers
Rose, J. F.Lakefield
Sherman, C. L.Luverne
Slater, S. A.Worthington
Smallwood, J. F.Worthington
Sogge, L.Windom
Stanley, C. R.Worthington
Taylor, Wm. J.Pipestone
Thorson, E. O.Luverne
Tiedeman, I. D.Heron Lake
Tofte, JosephineMinneapolis
Waller, Jas. D.Wilmont
Watson, F. G.Worthington
Weiser, F. R.Windom
Williams, L. A.Slayton
Wright, C. O.Luverne

Blue Earth Valley Medical Society

Martin and Faribault Counties
Regular meetings, 4th Thursday, May and October
Annual meeting, May

President
Wilson, C. E.Blue Earth
Secretary
Hunt, R. C.Fairmont

Anderson, S. H.Wells
Bailey, H. B.Ceylon
Best, F. E.Wells
Broberg, J. A.Blue Earth

Butz, J. A.Monterey
Chambers, W. C.Blue Earth
Dewey, G. W.Fairmont
Farrish, R. C.Sherburn
Gough, W. H.Granada
Henderson, A. J.Kiester
Holm, P.Wells
Herman, S.Welcome
Hunt, F. N.Fairmont
Hunt, R. C.Fairmont
Hunte, A. F.Truman

Jacobs, A. C.Elmore
Johnson, H. P.Fairmont
Logan, F. W.Blue Earth
Lowe, R. C.Fairmont
Luedtke, G. H.Fairmont
McGroarty, J. J.Easton
Mills, J. W.Winnebago City
Richardson, W. J.Fairmont
Sybilrud, H. W.Bricelyn
Silvernale, F. P.Elmore
Wilson, C. E.Blue Earth

Watonwan County Medical Society

Annual meeting, December

President
Ternstrom, O. H.St. James
Secretary
Grimes, H. B.Madelia

Grimes, H. B.Madelia
Hagen, O. E.Butterfield
Kabrick, O. A.Odin
McCarthy, W. J.Madelia

Rowe, W. H.St. James
Ternstrom, O. H.St. James
Thompson, AlbertSt. James

SEVENTH DISTRICT

COUNCILOR, F. A. DODGE, M. D. (2 years) Le Sueur

Nicollet-Le Sueur County Medical Society

Regular meetings, June, September and December
Annual meeting, December

President
Behmler, Fred. W. Lafayette
Secretary
Le Clerc, J. E. Le Sueur
Aitkens, H. B. Le Sueur Center
Baskett, Geo. T. St. Peter

Baskett, Olive T. St. Peter
Behmler, Fred W. Lafayette
Covell, W. W. St. Peter
Daniels, J. W. St. Peter
Dodge, F. A. Le Sueur
Ericson, S. Le Sueur
Fisher, J. M. St. Peter
Hartung, H. A. Le Sueur

Le Clerc, J. E. Le Sueur
McDougald, D. W. Long Island, N. Y.
Mellicke, W. A. Nicollet
Phelps, R. M. St. Peter
Strathern, F. P. St. Peter
Wentworth, L. F. Le Sueur Center

McLeod County Medical Society

Regular meetings, January, April, July and October
Annual meeting, January

President
Schmidt, W. R. Glencoe
Secretary
Axilrod, D. L. Hutchinson
Axilrod, D. L. Hutchinson

Clement, J. B. Lester Prairie
Clair, J. B. Winsted
Holm, H. H. Glencoe
Jellison, E. R. New Auburn
Klima, W. W. Stewart
Kohler, F. G. Hector

Langhoff, A. H. Glencoe
Lund, Theo. C. Hutchinson
Schmidt, W. R. Glencoe
Scholpp, O. W. Hutchinson
Sheppard, Fred Hutchinson
Sheppard, P. E. Hutchinson

Scott-Carver Medical Society

Regular meetings, first Thursday in March, June, September and December
Annual meeting, first Thursday in December

President
Von Bohland, F. J. Belle Plaine
Secretary
Reiter, H. W. Shakopee
Buck, Fred H. Shakopee

Fischer, H. P. Shakopee
Fischer, P. M. Shakopee
Henriksen, H. G. Elko
Landenberger, John. New Prague
McKeon, James St. Paul
Maertz, W. F. New Prague
Moloney, G. R. Belle Plaine

Novak, Edw. E. New Prague
Phillips, Wm. H. Jordan
Proshek, Chas. E. Chicago
Reiter, H. W. Shakopee
Schneider, H. A. Jordan
Von Bohland, F. J. Belle Plaine
White, J. B. Belle Plaine

Goodhue County Medical Society

Annual meeting first Tuesday in January

President
Conley, Alva. A. Cannon Falls
Secretary
Werner, N. L. Red Wing

Aanes, A. M. Red Wing
Anderson, J. V. Red Wing
Beyer, A. G. Red Wing
Claydon, L. E. Red Wing
Conley, Alva. Cannon Falls
Cremer, M. H. Red Wing
Gausemel, S. D. Goodhue

Johnson, A. E. Red Wing
Jones, A. W. Red Wing
McGuigan, H. T. Red Wing
Sawyer, H. P. Red Wing
Smith, M. W. Red Wing
Steffens, L. A. Red Wing
Werner, N. L. Red Wing

Rice County Medical Society

Regular meetings quarterly as called
Annual meeting, December

President
Mayland, M. L. Faribault
Secretary
Robilliard, C. M. Faribault
Babcock, F. M. Northfield
Davis, F. U. Faribault
Errickson, W. A. Faribault

Field, Merton Northfield
Haessly, S. B. Faribault
Hanson, A. M. Faribault
Huxley, F. R. Faribault
Kanne, C. W. Faribault
Lee, W. P. Northfield
Lexa, F. J. Lonsdale
Mayland, M. L. Faribault
Morse, W. E. H. Morristown
Moses, Joseph, Jr. Northfield

Plonske, C. J. Faribault
Robilliard, C. M. Faribault
Robilliard, W. H. Faribault
Rumpf, C. W. Faribault
Rumpf, W. H. Faribault
Smith, P. A. Faribault
Theissen, W. H. Faribault
Traeger, C. A. Faribault
Warren, F. S. Faribault
Wilson, Warren Northfield

Wabasha County Medical Society

Regular meetings, annually first Thursday after first Monday in July

President
Sutton, L. F. Mazeppa
Secretary
Wilson, W. F. Lake City
Bayley, E. H. Lake City

Bowers, H. E. Lake City
Branyan, Hugo Wabasha
Cochrane, W. J. Lake City
Dempsey, D. P. Kellogg
Fleischhauer, D. S. Wabasha
French, E. A. Plainview

Radabaugh, R. C. Hastings
Replogle, W. H. Wabasha
Schmidt, G. Lake City
Slocumb, J. A. Plainview
Sutton, L. F. Mazeppa
Wilson, W. F. Lake City

EIGHTH DISTRICT

COUNCILOR, W. F. BRAASCH, M. D. (1 year) Rochester

Blue Earth County Medical Society

Regular meetings, last Monday in each month

Annual meeting, last Monday in December

President
Liedloff, A. G. Mankato
Secretary
Snell, A. M. Mankato
Andrews, John W. Mankato
Andrews, Roy N. Mankato
Arnold, James E. Vernon Center
Benham, Edward W. Mankato
Black, William Mankato
Dahl, Gerhard A. Mankato
Denman, Austin V. Mankato

Edwards, Ralph T. Elysian
Franchere, Fred W. Lake Crystal
Hielscher, Helen H. Mankato
Hielscher, Julian A. Mankato
Holbrook, John S. Mankato
Holman, Carl J. Mankato
James, John H. Mankato
Kelly, Thos. C. Mankato
Kemp, Alphonse F. Mankato
Liedloff, Adolph G. Mankato
Lloyd, Hiram J. Mankato
Merrill, James E. Amboy

Miller, Victor Mankato
O'Connor, Patrick H. Amboy
Osborn, Lida Mankato
Pratt, Chelsea C. Mankato
Schlesselman, George
Good Thunder
Schlesselman, J. T. Mankato
Snell, Albert M. Mankato
Sohmer, Alphonse E. J. Mankato
Wentworth, Albert J. Mankato
Williams, Hugh O. Mankato
Williams, John Lake Crystal

Houston-Fillmore County Medical Society

No regular meetings

Annual meeting, October

President
Helland, G. M. Houston
Secretary
Fischer, O. F. Houston
Anderson, Norman E. Harmony
Browning, W. E. Caledonia
Christianson, H. W. Wykoff

Collins, J. S. Wabasha
Drake, F. A. Lanesboro
Eby, Cyrus B. Spring Valley
Fischer, O. F. Houston
Helland, G. M. Spring Grove
Helland, J. W. Spring Grove
Johnson, C. H. Spring Valley
Kibbe, O. A. Canton
Kierland, P. E. Harmony
Lannin, J. C. Mabel

Love, Geo. A. Preston
Nass, H. A. Mabel
Nelson, M. S. Spring Grove
Onsgard, C. K. Halstad
Onsgard, L. K. Houston
Rhines, D. C. Caledonia
Sather, E. R. Spring Valley
Tierney, C. M. Granger
Williams, R. V. Rushford
Utey, J. D. Glendale, Cal.

Mower County Medical Society

Regular meetings, last Thursday of every month

Annual meeting, November

President
Coleman, F. B. Austin
Secretary
Lommen, P. A. Austin
Allen, A. W. Austin
Baker, C. C. Austin

Cobb, Willis F. Lyle
Coleman, F. B. Austin
Grise, W. B. Austin
Hegge, C. A. Austin
Hegge, O. H. Austin
Henslin, A. E. LeRoy
Hertel, G. A. Austin
Leck, C. C. Austin
Lommen, P. A. Austin

Melzer, G. R. Lyle
Mitchell, R. S. Grand Meadow
Morris, E. H. Austin
Morse, M. P. LeRoy
Peirson, H. F. Austin
Shipley, H. M. Adams
Shottler, G. J. Dexter
Torkelson, P. T. Lyle
Warren, C. L. LeRoy

Dodge County Medical Society

No regular meetings

Annual meeting in August

President
Harrison, E. E. West Concord
Secretary
Bigelow, C. E. Dodge Center

Baker, Amos L. Kasson
Belt, Wallace E. Dodge Center
Bigelow, Chas. E. Dodge Center
Clifford, Frank F. West Concord

Flores, O. T. Dodge Center
Harrison, Elmer E. West Concord
Smith, Frank D. Kasson
Way, Osman F. Claremont

Olmsted County Medical Society

Regular meetings, second Wednesday in April, June, September and December

Annual meeting, second Wednesday in December

President
Gistrunk, W. E. Rochester
Secretary
Piper, M. C. Rochester

Abrams, W. D. Rochester
Adams, S. Franklin. Rochester
Adson, Alfred W. Rochester
Allen, Wilson A. Rochester
Amberg, Samuel Rochester
Anderson, C. M. Rochester
Andrews, C. F. Rochester
Asbury, J. T. Rochester
Balfour, Donald C. Rochester
Barborka, C. J. Rochester
Barnes, A. R. Rochester
Barrier, Chas. W. Rochester
Behn, Claud W. Rochester
Benedict, William L. Rochester
Benjamin, W. G. Rochester
Bergen, Ralph D. Rochester
Berkman, David M. Rochester
Bleifus, Walter F. Rochester
Bonta, M. B. Rochester
Boothby, Walter M. Rochester
Bowling, Harry H. Rochester

Bowler, John Pollard. Rochester
Braasch, William F. Rochester
Bradley, E. L. Rochester
Broders, Albert C. Rochester
Brown, George E. Rochester
Brown, P. W. Rochester
Brown, R. O. Rochester
Bryan, A. W. Rochester
Bueerman, Winifred Henry.
Rochester
Buie, L. A. Rochester
Bumpus, Herman C. Rochester
Burden, Verne G. Rochester
Burns, J. G. Rochester
Burns, R. E. Rochester
Camp, John Dexter. Rochester
Carman, Russell Daniel. Rochester
Cathcart, E. P. Rochester
Chaney, W. C. Rochester
Conner, H. M. Rochester
Craig, Wm. McK. Rochester
Crawford, Albert S. Rochester
Crenshaw, John L. Rochester
Crewe, John E. Rochester
Culligan, J. M. Rochester
Davis, Kenneth S. Rochester
Desjardins, Arthur U. Rochester
Dolder, Felix C. Eyota

Doyle, J. B. Rochester
Drips, D. G. Rochester
Dunlap, H. F. Rochester
Eager, B. F. Rochester
Ebert, Joseph William. Rochester
Eusterman, Geo. B. Rochester
Evarts, Arrah B. Rochester
Fawcett, Chas. E. Stewartville
Figi, F. A. Rochester
Fineman, S. Rochester
Finney, W. P. Rochester
Ford, Frances A. Rochester
Foucar, H. O. Rochester
Foulds, Gordon S. Rochester
Fowler, L. H. Rochester
Frazer, E. B. Rochester
Freud, C. F. Rochester
Gaarde, Fred W. Rochester
Garvin, John Day. Rochester
Giffin, H. Z. Rochester
Goekerman, W. H. Rochester
Graham, Christopher. Rochester
Granger, G. Booker. Rochester
Granger, Charles T. Rochester
Green, Carl Hartley. Rochester
Greenfield, William J. Rochester
Haines, S. F. Rochester
Hallberg, C. A. Rochester

Hallenbeck, Dorr F.....Rochester
 Hansel, French Keller.....Rochester
 Hanson, W. Arthur.....Rochester
 Hardt, L. L.....Rochester
 Harrington, S. W.....Rochester
 Hartman, Howard R.....Rochester
 Hedblom, Carl A.....Rochester
 Helmholz, H. F.....Rochester
 Hempstead, B. E.....Rochester
 Hench, Philip S.....Rochester
 Henderson, Melvin S.....Rochester
 Herbst, William P.....Rochester
 Heyerdale, Oscar C.....Rochester
 Hundling, H. W.....Rochester
 Hunt, Verne C.....Rochester
 Hutchinson, C. J.....Rochester
 Hyer, C. A.....Rochester
 Jackson, George H.....Rochester
 Jameson, Carol E.....Rochester
 Jepson, P. N.....Rochester
 Johnson, A. C.....Rochester
 Jones, H. T.....Rochester
 Joseph, E. G.....Rochester
 Joyce, George T.....Rochester
 Judd, Edward Starr.....Rochester
 Keith, N. M.....Rochester
 Kent, George B.....Rochester
 Kilbourne, Arthur F.....Rochester
 Koucky, J. D.....Rochester
 Lange, A. E.....Rochester
 Lemon, Willis S.....Rochester
 Lillie, Harold I.....Rochester
 Lillie, Walter I.....Rochester
 Linton, William B.....Rochester
 Logan, Archibald H.....Rochester
 Long, W. H.....Rochester
 Luden, Georgine.....Rochester
 Lyons, Horace R.....Rochester
 Lyons, John H.....Rochester
 Lyons, Shirley C.....Rochester
 McCorvie, J. E.....Rochester
 McFarland, Albert R.....Rochester
 McGuire, L. D.....Rochester
 McKaig, Carle B.....Rochester
 McVicar, Chas. S.....Rochester

Magath, T. B.....Rochester
 Mahle, A. E.....Rochester
 Malloy, J. F.....Rochester
 Masson, D. M.....Rochester
 Masson, James C.....Rochester
 Mayo, Charles H.....Rochester
 Mayo, William J.....Rochester
 Mebane, Donald Cummins.....Rochester
 Meeker, W. R.....Rochester
 Melson, Oliver C.....Rochester
 Merrill, U. H.....Rochester
 Meyerdling, Henry W.....Rochester
 Mitchell, J. I.....Rochester
 Moench, Laura Mary.....Rochester
 Moersch, Frederick P.....Rochester
 Moersch, H. J.....Rochester
 Moore, Alex. B.....Rochester
 Moore, T. D.....Rochester
 Moran, Robert E.....Rochester
 Mussey, Robert B.....Rochester
 Nagel, G. W.....Rochester
 Nesbit, Harold T.....Rochester
 New, Gordon B.....Rochester
 Ohlinger, Lorin B.....Rochester
 O'Leary, Paul A.....Rochester
 Ott, William O.....Rochester
 Pardee, Katherine.....Rochester
 Parker, B. R.....Rochester
 Parker, H. L.....Rochester
 Parker, J. William.....Rochester
 Pemberton, John deJ.....Rochester
 Peterman, M. G.....Rochester
 Peterson, Willard C.....Minneapolis
 Piper, Monte C.....Rochester
 Plankers, A. G.....Rochester
 Plummer, H. S.....Rochester
 Plummer, W. A.....Rochester
 Pollock, Lee W.....Rochester
 Powell, L. D.....Rochester
 Prangen, Avery D.....Rochester
 Proctor, O. S.....Rochester
 Pulford, DeLos Schuyler (Jr.).....Rochester
 Rankin, F. W.....Rochester

Rice, G. E.....Rochester
 Rivers, A. B.....Rochester
 Robertson, H. E.....Rochester
 Rockwood, Paul Reed.....Rochester
 Rosenow, Edward C.....Rochester
 Rowntree, L. G.....Rochester
 Russell, Herman R.....St. Paul
 Sanford, Arthur H.....Rochester
 Sargeant, Howard L.....Rochester
 Scholl, A. J.....Rochester
 Schoonover, F. S.....Rochester
 Seed, Lindon.....Rochester
 Senty, E. G.....Rochester
 Shaffer, Loren W.....Rochester
 Sheldon, Walter D.....Rochester
 Sistrunk, Walter E.....Rochester
 Smith, F. L.....Rochester
 Smiley, K. E.....Rochester
 Snyder, J. W.....Rochester
 Sprunt, William H.....Rochester
 Stacy, Leda June.....Rochester
 Stark, W. B.....Rochester
 Steven, George.....Byron
 Stevens, J. B.....Rochester
 Stewart, L. A. S.....Rochester
Ottawa, Ontario, Canada
 Stokes, John H.....Rochester
 Struthers, J. E.....Rochester
 Sutherland, C. G.....Rochester
 Swan, Theo. S.....Rochester
 Szlapka, T. L.....Rochester
 Taylor, R. V.....Rochester
 Vinson, Porter P.....Rochester
 Von Lackum, W. H.....Rochester
 Wagener, H. P.....Rochester
 Walters, Henry Waltman.....Rochester
 Weir, J. F.....Rochester
 Wilder, Russell M.....Rochester
 Wilhelm, L. F. X.....Rochester
 Wilkins, J. A.....Rochester
 Willis, Frederick A.....Rochester
 Wilson, Louis B.....Rochester
 Witherstine, H. H.....Rochester
 Woltman, Henry W. F.....Rochester

Waseca County Medical Society

Annual meeting, December

President
 Miller, H. A.....Waseca
 Secretary
 Gallagher, B. J.....Waseca

Blanchard, H. G.....Waseca
 Brandenburg, F. D.....New Richland
 Chamberlin, W. A.....Waseca
 Cory, W. M.....Waterville
 Gallagher, B. J.....Waseca
 Hagen, H. O.....New Richland

Lynn, J. F.....Waseca
 McIntire, H. M.....Waseca
 Miller, H. A.....Waseca
 O'Hara, J. J.....Janesville
 Swartwood, F. A.....Waseca
 Joyce, T. M.....Janesville

Winona County Medical Society

Regular meetings, first Tuesday in January, April, July, October
 Annual meeting in January

President
 Steiner, J. W.....Winona
 Secretary
 Robbins, C. P.....Winona
 Benoit, F. T.....Winona
 Clay, F. H.....St. Charles
 Heise, W. F. C.....Winona

Keyes, E. D.....Winona
 Leicht, O.....Winona
 Lichtenstein, H.....Winona
 Lindsay, W. V.....Winona
 Lynch, J. L.....Winona
 McLaughlin, E. M.....Winona
 Nauth, W. H.....Winona
 Neumann, C. A.....Lewiston
 Neumann, W. H.....Lewiston

Pritchard, D. B.....Winona
 Rissler, E. D.....Winona
 Robbins, C. P.....Winona
 Rosenberry, B. P.....Winona
 Schaefer, S.....Winona
 Scott, J. N.....St. Charles
 Steiner, J. W.....Winona
 Tweedy, G. J.....Winona
 Wilson, C. E.....Dakota

Freeborn County Medical Society

Regular meetings upon call of members
 Annual meeting, November

President
 Von Berg, J. P.....Albert Lea
 Secretary
 Folken, F. G.....Albert Lea

Burns, H. D.....Albert Lea
 Buturff, C. R.....Freeborn
 Calhoun, F. W.....Albert Lea
 Folken, F. G.....Albert Lea
 Freeman, J. R.....Glenville
 Gamble, J. W.....Albert Lea
 Gullixson, A.....Albert Lea

Kamp, B. A.....Albert Lea
 Nannestad, J. R.....Albert Lea
 Palmer, W. L.....Albert Lea
 Shultz, J. A.....Albert Lea
 Stewart, O. E.....Albert Lea
 Vollum, E. O.....Albert Lea
 Von Berg, J. P.....Albert Lea

Steele County Medical Society

Regular meetings, second alternate Tuesday of each month
 Annual meeting, December

President
 Smersh, J. F.....Owatonna
 Secretary
 Hart, A. B.....Owatonna
 Adair, J. H.....Owatonna
 Andrist, J. W.....Owatonna

Dally, W. J.....Blooming Prairie
 Ertel, E. Q.....Ellendale
 Hart, A. B.....Owatonna
 McIntyre, J. A.....Owatonna
 Melby, B.....Blooming Prairie
 Morehouse, G. G.....Owatonna
 Peterson, C.....Owatonna

Quigley, T. C.....Owatonna
 Senn, E. W.....Owatonna
 Smersh, F. M.....Owatonna
 Smersh, J. F.....Owatonna
 Stewart, A. B.....Owatonna
 Thimsen, N. C.....Blooming Prairie
 Warren, J. W.....Faribault

ALPHABETICAL ROSTER

Aanes, A. M.	Red Wing	Barron, Moses	Minneapolis	Bratrude, E. J.	Sacred Heart
Abbott, A. W.	Minneapolis	Barry, L. W.	St. Paul	Bray, C. W.	Biwabik
Abbott, J. S.	St. Paul	Barness, Nellie	St. Paul	Bray, E. R.	St. Paul
Abbott, Wm. P.	Duluth	Baskett, George T.	St. Peter	Briggs, F. W.	Duluth
Aborn, W. H.	Hawley	Baskett, Olive T.	St. Peter	Brigham, C. F.	St. Cloud
Abramovich, J. H.	St. Paul	Bass, G. W.	Minneapolis	Brigham, Frank	Watkins
Abrams, W. D.	Rochester	Bates, B. V.	Wheaton	Brimhall, J. B.	St. Paul
Adair, F. L.	Minneapolis	Baxter, S. H.	Minneapolis	Broberg, J. A.	Blue Earth
Adair, J. H.	Owatonna	Bayley, E. H.	Lake City	Broders, A. C.	Rochester
Adams, B. S.	Hibbing	Beadie, W. D.	St. Paul	Brodie, Walter D.	St. Paul
Adams, J. L.	Morgan	Beals, Hugh	St. Paul	Broker, W. S.	Battle Lake
Adams, R. C.	Bird Island	Beard, Archie H.	Minneapolis	Brooks, G. F.	St. Paul
Adams, S. Franklin, ..	Rochester	Beatty, J. H.	St. Cloud	Brooks, Chas. N.	Minneapolis
Adson, A. W.	Rochester	Beckley, F. L.	St. Paul	Brooks, D. F.	St. Paul
Ahrens, A. E.	St. Paul	Bedford, E. W.	Minneapolis	Brown, A. E.	Stillwater
Ahrens, A. H.	St. Paul	Beebe, W. L.	St. Cloud	Brown, A. H.	Pipestone
Aikens, H. B.	Le Sueur Center	Behmler, Fred W.	Lafayette	Brown, Edgar D.	Minneapolis
Akester, Ward	Marshall	Behn, Claud W.	Rochester	Brown, Ed. I.	St. Paul
Alden, J. F.	St. Paul	Beise, R. A.	Brainerd	Brown, Edw. J.	Minneapolis
Aldes, Harry	St. Paul	Bell, C. C.	St. Paul	Brown, G. E.	Rochester
Aldrich, F. H.	Belview	Bell, J. W.	Minneapolis	Brown, John C.	St. Paul
Alexander, F. H.	St. Paul	Bell, J. W., Jr.	Minneapolis	Brown, LeRoy	St. Paul
Alger, E. W.	Minneapolis	Belt, W. E.	Dodge Center	Brown, Lyle L.	Crookston
Aling, C. P.	Minneapolis	Benedict, E. E.	Minneapolis	Brown, P. W.	Rochester
Allen, A. W.	Austin	Benedict, W. L.	Rochester	Brown, R. O.	Rochester
Allen, Chas. C.	Austin	Benep, L. M.	St. Paul	Brown, R. S.	Minneapolis
Allen, F. H.	Staples	Benham, E. W.	Mankato	Brown, Silas E.	St. Paul
Allen, H. W.	Minneapolis	Benjamin, A. E.	Minneapolis	Browning, W. E.	Caledonia
Allen, Mason	St. Paul	Benjamin, W. G.	Rochester	Brunet, L. M.	Cloquet
Allen, W. A.	Rochester	Benn, F. G.	Minneapolis	Bryan, A. W.	Rochester
Allison, R. G.	Minneapolis	Bennion, P. H.	St. Paul	Buck, Fred H.	Shakopee
Allquist, H. E.	Minneapolis	Benoit, F. T.	Winona	Buckley, E. W.	St. Paul
Amberg, Samuel	Rochester	Benson, F. S.	Willmar	Bueerman, Winifred Henry	Rochester
Ancker, A. B.	St. Paul	Benson, Geo. E.	Minneapolis	Buie, L. A.	Rochester
Anderson, A. E.	Minneapolis	Benson, R. D.	Minneapolis	Bulkley, Kenneth	Minneapolis
Anderson, A. G.	Minneapolis	Bentley, Norman P.	St. Paul	Bullen, F. W.	Hibbing
Anderson, C. M.	Rochester	Berge, H. M.	Twin Valley	Bumpus, H. C.	Rochester
Anderson, David D.	Minneapolis	Bergen, Ralph D.	Rochester	Burch, F. E.	St. Paul
Anderson, Edward Dyer	Minneapolis	Bergh, L. N.	Montevideo	Burden, Verne G.	Rochester
Anderson, Hilding C.	Duluth	Bergheim, M. C.	Hawley	Burfiend, G. H.	St. Paul
Anderson, J. K.	Oak Terrace	Bergquist, K. E.	Duluth	Burnap, W. L.	Fergus Falls
Anderson, J. V.	Red Wing	Berkman, D. M.	Rochester	Burns, H. D.	Albert Lea
Anderson, Norman E.	Harmony	Berrisford, Paul D.	St. Paul	Burns, F. W.	St. Paul
Anderson, R. E.	Willmar	Bessesen, A. N.	Minneapolis	Burns, H. J.	Duluth
Anderson, S. H.	Wells	Best, F. E.	Wells	Burns, J. G.	Rochester
Andres, R. G.	St. Paul	Beyer, A. G.	Red Wing	Burns, M. A.	Milan
Andrews, C. F.	Rochester	Bigelow, C. E.	Dodge Center	Burns, R. E.	Rochester
Andrews, J. W.	Mankato	Binet, H. E.	Grand Rapids	Burns, R. L.	Two Harbors
Andrews, R. N.	Mankato	Binger, H. E.	St. Paul	Burns, R. M.	St. Paul
Andrist, J. W.	Owatonna	Birnberg, T. L.	St. Paul	Buscher, H.	St. Paul
Annis, H. B.	Minneapolis	Bishop, Chas. Wesley	Minneapolis	Bushey, M. E.	Arlington
Archibald, Frank M.	Mahnomen	Bissell, F. S.	Minneapolis	Butler, John	Minneapolis
Arey, H. C.	Excelsior	Black, Wm.	Mankato	Butturf, C. R.	Freeborn
Arminen, K. V.	Duluth	Blacklock, S. S.	Hibbing	Butz, J. A.	Monterey
Armstrong, E. L.	Duluth	Blake, Jas.	Hopkins	Byrnes, W. J.	Minneapolis
Armstrong, J. M.	St. Paul	Blakely, C. C.	Barnum	Cabot, V. S.	Minneapolis
Arnold, E. W.	Adrian	Blanchard, H. G.	Waseca	Caine, C. E.	Morris
Arnold, James E.	Vernon Center	Bleifus, W. F.	Rochester	Caihou, F. W.	Albert Lea
Arnsen, J. M.	Graceville	Bock, R. A.	St. Paul	Calkins, L. A.	Minneapolis
Around, Khalil	St. Paul	Boeckmann, Eduard	St. Paul	Cameron, J. A.	St. Paul
Artz, C. P.	St. Paul	Boeckmann, Egil	St. Paul	Camp, John Dexter	Rochester
Asbury, J. T.	Rochester	Boekman, M. W. H.	Minneapolis	Camp, W. E.	Minneapolis
Athens, A. S.	Buhl	Boehm, J. C.	St. Cloud	Campbell, E. Paul	St. Paul
Aune, Martin	Minneapolis	Bohland, E. H.	St. Paul	Campbell, J. E.	South St. Paul
Aurand, W. H.	Minneapolis	Bohling, B. S.	Sandstone	Campbell, L. M.	Minneapolis
Aurness, P. A.	Minneapolis	Bole, R. S.	St. Paul	Campbell, Robert	Minneapolis
Ausman, C. F.	Paynesville	Boley, E. S.	Stillwater	Cannon, C. N.	St. Paul
Avery, J. Fowler	Minneapolis	Bolsta, Chas.	Ortonville	Cannon, Harry	St. Paul
Axilrod, D. L.	Hutchinson	Bolstad, H. C.	St. Paul	Carey, Jas. B.	Minneapolis
Aylmer, A. L.	Minneapolis	Boman, P. G.	Duluth	Carman, C. L.	St. Paul
Ayres, G. T.	Ely	Bone, Merle	Kelliher	Carman, Paul I.	St. Paul
Babcock, F. M.	Northfield	Bong, J. H.	Jasper	Carman, Russell Daniel	Rochester
Bacon, Donald K.	St. Paul	Bonta, M. B.	Rochester	Carroll, Wm. C.	St. Paul
Bacon, Knox	St. Paul	Booth, A. E.	Minneapolis	Carstens, C. F.	Hibbing
Bacon, L. C.	St. Paul	Boothby, W. M.	Rochester	Cathcart, E. P.	Rochester
Bacon, R. S.	Montevideo	Boreen, C. A.	Minneapolis	Catlin, John J.	Buffalo
Badeaux, G. I.	Brainerd	Borgeson, Egbert J.	Hanska	Catlin, T. J.	Palisade
Bagley, W. R.	Duluth	Bossingham, O. N.	Lake Benton	Cavanaugh, J. O.	St. Paul
Baier, Florence C.	Minneapolis	Bosworth, Robinson	St. Paul	Chadbourne, A. G.	Heron Lake
Bailey, H. B.	Ceylon	Bottomfson, B. T.	Moorhead	Chadmerlin, W. A.	Waseca
Baker, A. C.	Fergus Falls	Boutman, H. A.	Minneapolis	Chambers, W. C.	Blue Earth
Baker, A. L.	Kasson	Bowers, H. E.	Lake City	Chandler, O. B.	St. Paul
Baker, Alfred T.	Minneapolis	Bowers, J. T.	Thief River Falls	Chaney, W. C.	Rochester
Baker, E. L.	Minneapolis	Bowing, H. H.	Rochester	Chapman, T. L.	Duluth
Baker, H. A.	Minneapolis	Bowler, John Pollard	Rochester	Chatterton, C. C.	St. Paul
Baker, Looe	Minneapolis	Boyer, S. H.	Duluth	Cheleyn, S. J.	Minneapolis
Bakke, O. H.	Minneapolis	Boysen, P.	Pelican Rapids	Cheney, E. L.	Duluth
Balcom, G. G.	Lake Wilson	Braasch, Wm. F.	Rochester	Christenson, C. R.	Starbuck
Balcom, F. E.	St. Paul	Brabec, F. J.	Perham	Christenson, E. P.	Two Harbors
Baldwin, L. B.	Minneapolis	Braden, A. J.	Duluth	Christiansen, A. G.	St. Paul
Balfour, D. C.	Rochester	Bradley, E. L.	Rochester	Christianson, H. W.	Wykoff
Ball, C. R.	St. Paul	Brand, G. D.	St. Paul	Christie, G. R.	Long Prairie
Barber, J. P.	Minneapolis	Brand, W. A.	Redwood Falls	Christison, J. T.	St. Paul
Barborka, A. J.	Rochester	Brandenberg, F. D.	New Richland	Churchill, A. G.	St. Paul
Barfield, J. J.	Granite Falls	Branton, A. F.	Willmar	Cirkler, A. A.	Minneapolis
Barnes, A. R.	Rochester	Branton, B. J.	Willmar	Claire, J. B.	Winsted
Barney, L. A.	Duluth	Branyan, Hugo	Wabasha	Clark, F. F.	Duluth
Barrett, Fred	Gilbert	Bratrud, A. F.	Minneapolis	Clark, H. B.	St. Cloud
Barrier, Chas. W.	Rochester	Bratrud, O. Edward	Warren	Clark, H. S.	Minneapolis
		Bratrud, Theodor	Warren		

Clark, T. C.	Minneapolis	Doms, H. C.	Slayton	Flom, A. O.	Chisago City
Clay, E. M.	Renville	Doms, Wm.	Woodstock	Flores, O. T.	Dodge Center
Clay, F. H.	St. Charles	Donaldson, C. A.	Minneapolis	Fogarty, Chas. W.	St. Paul
Claydon, L. E.	Red Wing	Doolittle, L. E.	Duluth	Foley, F. E. B.	St. Paul
Clement, J. B.	Lester Prairie	Dorge, Richard L.	Minneapolis	Folken, F. G.	Albert Lea
Clifford, F. F.	West Concord	Dornblaser, H. Bright	Minneapolis	Forbes, R. S.	Duluth
Cobb, S. A.	St. Paul	Douglas, H. E.	Blackduck	Ford, Frances A.	Rochester
Cobb, Willis F.	Lyle	Douglass, J. E.	State Sanatorium	Forrest, C. G.	Clearbrook
Cochrane, W. J.	Lake City	Doxey, G. L.	Minneapolis	Foucar, H. O.	Rochester
Colby, Woodward	St. Paul	Doyle, George C.	Duluth	Foulds, Gordon, S.	Rochester
Cole, H. B.	Redwood Falls	Doyle, J. B.	Rochester	Fowler, L. H.	Rochester
Cole, Wallace H.	St. Paul	Doyle, L. O.	Lindstrom	Fox, John M.	Minneapolis
Coleman, F. B.	Austin	Drake, Carl B.	St. Paul	Franchere, F. W.	Lake Crystal
Collie, H. G.	St. Paul	Drake, C. R.	Minneapolis	Franzen, H. G.	Minneapolis
Collins, A. N.	Duluth	Drake, F. A.	Lanesboro	Frazier, Geo. W.	Duluth
Collins, H. C.	Duluth	Dredge, H. P.	Sandstone	Frazier, E. B.	Rochester
Collins, J. S.	Wabasha	Drenning, F. C.	Duluth	Freeborn, J. A.	Fergus Falls
Colvin, A. R.	St. Paul	Driesbach, N.	Minneapolis	Freed, C. F.	Rochester
Comstock, A. E.	St. Paul	Drips, D. G.	Rochester	Freed, O. J. R.	Cokato
Condit, W. H.	Minneapolis	Drought, W. W.	Fergus Falls	Freeman, C. D.	St. Paul
Conley, Alva A.	Cannon Falls	Dryden, F. M.	Crookston	Freeman, Geo. H.	Willmar
Conner, H. M.	Rochester	Du Bois, J. A.	Sauk Center	Freeman, J. P.	Glenville
Conner, Wm. H.	St. Paul	Du Bois, J. F.	Sauk Center	Freeman, W. L.	Foley
Connor, C. E.	St. Paul	Dubbe, F. H.	New Ulm	Frelich, E. O. B.	Stillwater
Conyngham, E. F.	Underwood	Dudley, J. H.	Windom	French, E. A.	Plainview
Cook, Henry Wireman	Minneapolis	Dulude, S.	Dassel	French, H. S.	Grove City
Cook, Paul B.	St. Paul	Dunlap, H. F.	Rochester	Friesleben, Wm.	Sauk Rapids
Cooney, H. C.	Princeton	Dunlop, Alex.	Crookston	Frisch, F. P.	Gibbon
Corbett, J. Frank	Minneapolis	Dunn, Geo. Robt.	Minneapolis	Fritsche, Albert.	New Ulm
Corniea, A. D.	St. Paul	Dunn, J. N.	St. Paul	Fritsche, L. A.	New Ulm
Corrigan, J. E.	Spooner	Dunn, Louis	Minneapolis	Froelich, H. W.	Thief River Falls
Cory, W. M.	Waterville	Dunsmoor, F. A.	Minneapolis	Frost, E. H.	Willmar
Cosgriff, J. A.	Lamberton	Durgin, F. L.	Nopeming	Fulton, J. F.	St. Paul
Cosgrove, J. H.	Duluth	Dutton, C. E.	Minneapolis	Furber, W. W.	Cottage Grove
Cosman, E. O.	Minneapolis	Eager, B. F.	Rochester	Gaarde, F. W.	Rochester
Countryman, Roger S.	St. Paul	Earl, George A.	St. Paul	Gager, E. C.	St. Paul
Courtney, Walter	Brainerd	Earl, Robert O.	St. Paul	Gaines, E. C.	Buffalo Lake
Covell, W. W.	St. Peter	Eberlin, E. A.	Glenwood	Gallagher, B. J.	Waseca
Coventry, W. A.	Duluth	Ebert, Joseph William	Rochester	Gamble, J. W.	Albert Lea
Cowern, E. W.	North St. Paul	Eby, C. B.	Spring Valley	Gammell, J. H.	Minneapolis
Cowing, P. G.	Evansville	Eckstein, A. W.	Comfrey	Gardner, Edwin L.	Minneapolis
Crafts, Leo M.	Minneapolis	Edwards, Ralph C.	Elysian	Garvin, John Day	Rochester
Craig, C. C.	International Falls	Egan, John M.	Minneapolis	Gausemel, S. D.	Goodhue
Craig, Wm. McK.	Rochester	Eggen, O. K.	Minneapolis	Gauthier, W.	Virginia
Crandall, William	Brown Valley	Ehmke, Wm. E.	Willow River	Geer, Everett K.	St. Paul
Cranmer, Richard R.	Minneapolis	Eisengraeber, G. A.	Granite Falls	Geissenger, John D.	St. Paul
Crawford, Albert S.	Rochester	Eisenman, W. G.	Chisholm	Geist, Emil S.	Minneapolis
Cremer, M. H.	Red Wing	Eitel, G. G.	Minneapolis	Geist, George A.	St. Paul
Crenshaw, J. L.	Rochester	Eklblad, J. W.	Duluth	Gendron, J. F.	Grand Rapids
Cress, E. E.	Boyd	Ekelund, C. T.	New Ulm	Gerber, Milo P.	Brainerd
Cress, P. J.	Ellsworth	Eklund, Wm. J.	Duluth	Germo, Chas.	Balaton
Crew, J. E.	Rochester	Elias, F. J.	Duluth	Ghent, C. Harry	St. Paul
Crosen, F. R.	Proctor	Ellison, David E.	Minneapolis	Ghent, M. M.	St. Paul
Cross, J. G.	Minneapolis	Ellison, Frank E.	Monticello	Gibbon, L. L.	Lowry
Crowe, J. H.	Virginia	Elsey, J. R.	Glenwood	Giere, E. O.	St. Paul
Crowl, Verne C.	Bertha	Ely, O. S.	South St. Paul	Giesler, Paul W.	Minneapolis
Crume, Geo. P.	Minneapolis	Engberg, E. J.	St. Paul	Giffin, H. Z.	Rochester
Culligan, J. M.	Rochester	Engl, Sigfred	Cottonwood	Gilbert, John D.	Carlton
Curtin, John T.	Minneapolis	Englehart, P. C.	Wood Lake	Gillfillan, J. S.	St. Paul
Cutts, G. A. C.	Litchfield	Eppard, R. M.	Cloquet	Gillispie, N. H.	Duluth
Cutts, George	Minneapolis	Erb, F. A.	Minneapolis	Gilmore, R.	Bemidji
Dack, Lloyd, G.	St. Paul	Ericson, J. G.	Minneapolis	Ginsberg, Wm.	St. Paul
Dahl, Elmer O.	Minneapolis	Ericson, Swan	LeSueur	Giroux, A. A.	Duluth
Dahl, G. A.	Mankato	Ernest, G. C.	St. Paul	Glycer, R. T.	Sunnyvale, Calif.
Dahl, John A.	Minneapolis	Erickson, W. A.	Faribault	Goekerman, W. H.	Rochester
Dahlstrom, A. W.	Minneapolis	Ertel, E. Q.	Ellendale	Goehrs, H. W.	St. Cloud
Daignault, O.	Benson	Eshelby, E. C.	St. Paul	Goltz, E. V.	St. Paul
Dailey, W. J.	Blooming Prairie	Esser, John	Perham	Golden, C. M.	Tyler
Daniel, Donald H.	Minneapolis	Estrem, C. O.	Fergus Falls	Goodman, C. E.	Virginia
Daniels, J. W.	St. Peter	Estrem, T. A.	Hibbing	Goodson, Catherine M.	Fergus Falls
Danielson, K. A.	Litchfield	Eusterman, G. B.	Rochester		
Darling, J. B.	St. Paul	Evarts, Arrah B.	Rochester		
Darrow, D. C.	Moorhead	Everlof, J. L.	Minneapolis		
Dart, Leslie O.	Minneapolis	Evert, J. A.	St. Paul		
Daugherty, E. B.	St. Paul	Ewing, C. F.	Wheaton		
Daugherty, L. E.	St. Paul	Fahey, E. W.	Duluth		
Davis, B. F.	Duluth	Fansler, W. A.	Minneapolis		
Davis, F. U.	Faribault	Farr, R. E.	Minneapolis		
Davis, Herbert	St. Paul	Farrish, R. C.	Sherburn		
Davis, H. S.	Duluth	Fawcett, C. E.	Stewartville		
Davis, Kenneth S.	Rochester	Feidt, W. W.	Minneapolis		
Davis, Lloyd T.	Wadena	Ferguson, J. B.	St. Paul		
Davis, William	St. Paul	Ferguson, J. C.	St. Paul		
Davison, P. C.	Willmar	Fesler, Harold H.	St. Paul		
Dawswell, W. J.	Benson	Field, Merton	Northfield		
De Boer, Hermann	Edgerton	Figl, F. A.	Rochester		
Dedolph, Karl	St. Paul	Fineman, S.	Rochester		
Delmore, J. L.	Roseau	Finney, W. P.	Rochester		
Dempsey, D. P.	Kellogg	Fischer, H. P.	Shakopee		
Denman, A. V.	Mankato	Fischer, O. F.	Houston		
Dennis, W. A.	St. Paul	Fischer, P. M.	Shakopee		
Deauf, B. I.	Brainerd	Fisher, J. M.	St. Peter		
Desjardins, Arthur W.	Rochester	Fitzgerald, E. T.	Morris		
Dewey, G. W.	Fairmont	Fjeldstad, C. Alford	Minneapolis		
Dezell, Earl R.	Minneapolis	Fjellman, R. C.	Minneapolis		
Deziel, G.	Minneapolis	Fjeldstad, C. Alford	Minneapolis		
Dickson, Thos. H., Jr.	St. Paul	Flagstad, A. E.	St. Paul		
Disen, C. F.	Minneapolis	Fleischhauer, D. S.	Wabasha		
Ditmeier, L. M.	Jasper	Fleming, A. S.	Minneapolis		
Dittman, Geo. C.	St. Paul	Fleming, C. Filmore	Minneapolis		
Dodge, F. A.	Le Sueur	Fleming, James	Cloquet		
Dohm, A. J.	St. Paul	Flinn, B. P.	Redwood Falls		
Dolan, C. P.	Worthington	Flinn, T. E.	Redwood Falls		
Dolder, F. C.	Eyota	Flocken, Chas. F.	Minneapolis		

Gullixson, A.	Albert Lea	Hilger, J. M.	Iona	Joyce, T. M.	Janesville
Gunderson, Harley J.	Minneapolis	Hilger, L. A.	St. Paul	Judd, E. S.	Rochester
Gunderson, Nels A.	Minneapolis	Hirschboeck, F. J.	Duluth	Judson, W. E.	Duluth
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ORIGINAL ARTICLES

IS PUBLIC HEALTH WORK A MENACE TO REGULAR MEDICINE?*

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Benson, Minn.

Never before in its history has regular medicine been so beset with dangers both from within and without as at the present time.

Dangers from within are over-commercialization, disregard of the spirit of the code of ethics (in some instances even disregard of the letter) and petty jealousies which lead to acts beneath the dignity of the right minded man in any profession.

The most outstanding danger from without is the army of irregulars, paths, cults and healers.

In the beginning, practitioners of medicine were searchers after truth with small foundations of facts to build upon. The fathers of medicine had established a code which was idealistic. The devotee of the healing art gave freely of his knowledge and effort without regard for returns, which, in a majority of cases, amounted to a bare existence. This condition obtained until quite recently. Since physicians have abandoned this practice and are now demanding and receiving fees that enable them to live as well or better than the average of men and assume a position of respect in the community, they have been envied and imitated by many who are not willing to spend the time and study, or who are not mentally able to attain the high standards demanded by regular medicine. In order to accomplish their ends, which are essentially financial, they have resorted to prejudice—an appeal to class hatred and dishonesty.

The human being as he descended from his sav-

age progenitors has had incorporated into his being certain characteristics and attributes which are as much a part of him as are the organs of his body. Faith, hope and charity are predominant; a belief in visions, modern miracles, sorcery and incantations is not uncommon and superstition is rife. These attributes have made him an easy prey when dealing in subjects in which he is not learned.

Regular medicine has had its profits from this condition, but the physician has not exploited his fellow man to any extent. The irregulars are using this failing as their principal stock in trade and are reaping a harvest of good money from pleasant work, giving very little benefit and leaving the hard, dirty, unpleasant, nerve-racking and poor-paying work for the regular practitioners. He takes from the regular practitioner that which by right of education and ability belongs to him. This is all bad, but this man is not a real menace to regular medicine because he will not last.

It has been ten years or more since we began to hear about state medicine. It was an indefinite thing then; now it has approached so near that it must be faced immediately, understandingly, and with a clean-cut plan for combating it. The policy of indifference, and later the panicky condition of mind which has characterized most of our movements and led us to strike out blindly at friend and foe alike, will not do. State medicine is not the subject of this paper, but public health, if foolishly handled, may be in the same class and can come dangerously near being as much a menace as state medicine.

The question, "Am I my brother's keeper?" is no longer a question. Almost the entire civilized world is to some extent reaching out to help those less fortunate than themselves. Whether it be a kind word to the lonely, a warm garment for the orphan at our gate, or food for the Near East, we have all assumed the helpful spirit.

Few subjects can have a stronger appeal than sickness. The suffering of the individual and his

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family, the hardships that so often accompany and follow it, death, helpless orphans left without proper protection and care—these are only some of the long train of heart-breaking events. The question is, what are we to do about it? To cure the sick is not the correct answer. It is—to prevent sickness. Public health is prevention of sickness and disease. Is prevention of disease a menace to regular medicine? Are we in the same class with the barkeeper who in saloon days ordered from his place the man who tried to persuade the drunkard that he had had enough? The desire to prevent disease is as natural in the individual as the desire to prevent suffering from any other cause—from hunger, from cold due to insufficient clothing or poor housing, from the consequences of lack of training, mental and physical. Sociology, which is the study for the betterment of the mentally and physically deficient, has grown to be an immense power for good, and like all good things it has great possibilities for harm, if not wisely administered. The number of people supporting welfare work is large, and the medical profession is only a very small part of it, but no single unit in its composition is so important as the men in regular medicine. Theirs is the duty of giving the expert advice so necessary to its wise functioning. Are we going to give our efforts wholeheartedly to this work, or will we let it drift into the hands of impractical dreamers and know-it-all professional uplift workers? It is up to us! Disease with its attendant conditions is an inseparable part of sociology, and *state medicine is sociology gone mad*.

The prevention of disease did not become in any way possible until its cause and nature were known. Vital statistics were necessary before its accomplishments could be measured. It is a matter of common knowledge that the death rate from the communicable diseases is on the decline. Tuberculosis at the 1872 death rate (the year that the State Board of Health began functioning) would in 1921 have caused 2,700 deaths, taking into account the increase in population. The actual number was 1,872. The five diseases, tuberculosis, typhoid fever, smallpox, scarlet fever and diphtheria—figured in the same manner, would have caused 5,308 more deaths in 1921 than actually did occur. These results have been made possible almost entirely by the work of men in regular medicine. A few men have been as helpful as barnacles on a

ship. Sociologists know these facts; they know who did it; they know that disease is, much of it, preventable—that health is a purchasable commodity. They know that the records of the draft boards show that 21 per cent of what should have been our most perfect physical manhood was rejected as unfit for service and that 49 per cent showed defects. They know that these defects could many of them have been prevented if taken in childhood, and they have become impatient of results. They came to regular medicine—not to any of the paths, cults or healers; they came to regular medicine and said, “Let us lend a hand, guide us, and, working together, we will accomplish greater things.” What occurred? We did not respond. They asked us to lead. We failed them and they have fallen into the hand of professional uplifters, who have made and are making more soft jobs for themselves. They have subsidized the nurses we have trained in an attempt to bridge over their ignorance. They have come between the people and their natural and legitimate advisers in health matters—the family physicians. The nurse is as dependent on regular practitioners and regular medicine for her usefulness as she can be; yet many nurses are drifting into the camp of the enemy, ships without a rudder. As I see it all, the man in regular medicine has not been awake to his duties, possibilities and dangers. He has been self-centered, tended strictly to peddling his pills and welcoming the newest arrival. The fathers taught us to eschew the worldly things and the sordid, and we have pretty well followed their teachings. We doctors keep out of politics and have not given things outside the practice of medicine the attention that we should have done. We have not given intelligent thought to our dangers and fought them. We are now waking up and have become panicky, and are dodging at shadows and seeing things instead of giving intelligent and constructive thought to turning these things to our use and benefit.

Exactly what has public health done, and what is it doing? Is it a menace to us? How can we turn it to our benefit? What is the correct solution of this problem—not of our own making or within our power to stop? This is the question of the hour. The largest single thing that preventive medicine has done, aside from the intangible and unmeasurable thing that we call education, has been to put about 12 per cent of our consumptives

into institutions. This took the business right away from us, and prevented many new cases.

Preventive medicine has lowered the death rate from all communicable diseases. It is trying, by teaching proper living, to stop the increase in organic diseases.

Accepting the statement that the child is the father of the man, preventive medicine is attempting to improve the living and growing conditions of the child by providing for proper housing, food, clothing, exercise, and living in general. Cure or improvement of defects, prenatal care of mothers, control of defectives, are only a few of the things it is doing.

If all sickness could be stamped out right now, those of us who have not profited by the war and other circumstances, and laid by a competency, might have to seek other employment. If a reasonable number of health aims are accomplished, the number of physicians required will not, I believe, be smaller than at present. Our physical machines will always be abused, the autos and airplanes will always bump into us. Unavoidable bad health conditions will always exist. We will always go out on a "bat" and overeat and dissipate generally. People will always need to be *cured*. Rules of disease prevention and general well-being will always require interpretation and elucidation on the part of the physician, and people will be paying us for keeping them well as gladly as they are now paying us for curing them.

Bitter complaint has been made by the profession of methods adopted and work already done. Much of this criticism is unjust and inexcusable for the reason that those making it have not made a sufficient investigation to form an intelligent opinion.

Regular practitioners have been referred to as "medical doctors." This in the same way that we refer to dirt farmers. Public health in Minnesota has never gotten out of the hands and control of medical doctors. Eight of the nine members of the State Board of Health, all members of the Tuberculosis Commission, are doctors, and a majority of the seven members of the Executive Committee of the Minnesota Public Health Association are doctors. It has taken strenuous efforts to keep the latter organization under medical control. To neglect this organization and allow it to get out of hand would be harmful and even dangerous.

The men in charge of these activities have never been unmindful of the interests of the regular prac-

itioner. You have not always agreed as to the wisdom of their methods. Doctors are not prone to agree. No group of men can take care of your interests without your active coöperation.

Bitter and senseless criticism has sometimes been visited on the nurses. Sometimes criticism was to some extent merited, but more often the trouble was due to the neglect of the physician himself. If he had not left the direction of her work to some club, but had taken pains to learn the needs, and then had coöperated with and directed her efforts, perhaps he would have had less reason for complaint. As poorly as the work already done has been, it has resulted in sending to the dentist lots of bad teeth; to the doctors, diseased tonsils, bad eyes, and an endless line of defects for correction. The man who pats himself on the back and thinks that it was his personality and good looks that brought the business is on the wrong track. It was public health education and work, and the man who has profited by this added business should be the last to consider public health a menace. If we allow this work to get into the hands of dreamers and professional uplifters, we will see free treatment clinics and some of the other evils of state medicine. Public health must stop with education (the word education considered in its broadest sense) and the care of the indigent. When this work is done under the intelligent direction of medical men, it will be a benefit rather than a menace to regular medicine.

TRAUMATIC RUPTURE OF THE NORMAL SPLEEN*

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Medical literature is sporadically dotted with brief case reports of the traumatic rupture of the spleen. This condition is variously and frequently designated as closed, concealed, subcutaneous, subparietal, "rupture produced by blunt force," and "rupture produced without external signs." This catastrophe is fortunately not of every-day occurrence. The general surgeon may but rarely be called upon to treat one. Nevertheless the general interest in this serious condition lies, first, in the

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fact that it invariably occurs without penetration of the abdominal wall; second, in its increasing frequency, due, no doubt, to the universal use of the automobile and the many accidents incidental thereto; third, in its grave prognosis and exceedingly high mortality rate; and, fourth, in its proper management, which calls for a display of the keenest diagnostic and surgical skill. The very serious nature of these injuries, and the disastrous results following failure to correctly recognize them, justifies the critical analysis of this infrequent subject, both from a diagnostic and surgical point of view.

The literature has been carefully collected and reviewed by Bessel-Hagen,¹ Berger,² Brogsetter,³ Carstens,⁴ Hörz,⁵ and others. Over five hundred cases of ruptured spleens have been reported since the fifteenth century. At that time Celsus⁶ first described it. Morgagni,⁷ in 1765, collected eighteen cases of the subcutaneous rupture of the spleen. A very large majority of these, however, belong to the pathological group, malaria, typhoid, and anemia being the most common causes. Edler⁸ claims that the subcutaneous type of rupture is more common than the open. He found out of 160 cases that 51.8 per cent were subcutaneous in character and 48 per cent were "open," such as the stab or gunshot. Berger,² who reviewed all the cases up to 1902, believes the former to be three times as frequent as the latter, and that the frequency of rupture of the spleen, as compared with the same injury to other solid viscera, was as follows: rupture of the spleen, 20 per cent; kidney, 22 per cent; and of the liver, 37.5 per cent. In 1906, Hörz,⁵ reported thirty-five cases. In 1908, Brogsetter³ reported a series of forty-seven cases of rupture of the normal spleen. Barnes,⁹ in 1914, collected thirty-one, also of the normal spleen, to which he added one of his own. Willis,¹⁰ in 1917, was able to add fifty-seven, including his own four.

The youngest patient on record in whom a ruptured spleen due to trauma was found was a "new born," dropped on the floor in a precipitate labor (Simpson¹¹). The oldest patient on record was aged fifty-seven, the injury resulting from a kick in the abdomen (Madlener¹²). There is a much larger number of these injuries in children and young adults than is ordinarily supposed. This, I believe, is due to the recklessness and adventurousness of the younger generation. The decrease in number with age has been ascribed by one author as being due to the atrophy of the spleen. In this series of 128

cases, including seven reported by the author, the following distribution of ages was found:

<i>Age</i>	<i>Number of Cases</i>
1 to 10.....	23
11 to 20.....	37
21 to 30.....	29
31 to 40.....	15
41 to 50.....	8
51 to 60.....	4
Not recorded	12

From the above data it can be seen that one-half of the cases occurred in children and young adults up to twenty years.

Out of 127, 104 or 81.8 per cent occurred in males and twenty-three or 18.1 per cent in females. This preponderance of injuries in males is obviously due to exposure to hazards.

The spleen is perhaps the most friable of all the abdominal visceral organs. Its rather superficial and somewhat fixed position, under the ribs, its tendency both physiologically and pathologically to engorgement, its fragile texture and thin capsule, are reasons often given for its liability to rupture when traumatized. All forms of external violence may produce a laceration. As is well known, in the majority of cases it is the rapidity and velocity of the blow, rather than the size and shape of the agent causing the injury, that is of etiological importance. The more rapid the blow, the less time the abdominal muscles have to place themselves on guard in order to protect adequately the underlying organs. While a slight trauma may and has produced these injuries, trauma of the normal spleen is usually due to severe inflictions of a degree sufficient to produce other accompanying injuries. In this series we found the most common etiological factors in the order of their frequency to be as follows:

	<i>Number</i>	<i>Per Cent</i>
Fall	43	34.1
Run over	35	26.9
Blows	23	18.2
Crush	10	7.9
Strain	1	0.7

In one case a fall of only seven feet was necessary to produce symptoms (Pitts and Ballance¹³). In another case, cited by the same authors, a cricket ball pitched by a boy of ten years was the offender.

Chart 1 shows that the symptoms in general are those of internal hemorrhage. The rapidity of the

onset and the degree of bleeding vary greatly in different cases. In some death ensues within a very short time, on account of the rapid and great loss of blood; while in others small subcapsular tears and clotting postpone alarming symptoms for hours or even days. Shock, occasionally mild, more often severe, with its accompanying symptoms of subnormal temperature, rapid thready pulse, pallor, cold perspiration, clammy skin, and falling blood pressure, is usually the first manifestation. Pain is the first and chief complaint of the patient. It slowly increases, frequently is localized in the splenic region, but often throughout the whole abdomen, and is intensified by bodily movements, deep respiration, or cough. Later the patient complains of thirst, and shortly thereafter of air hunger. One is immediately struck by the pallor, the blanched lips, and the colorless appearance of the mucous membranes. The facial expression is anxious, and soon the subject becomes restless. Temperature may at first be subnormal, later rising above normal. Respirations soon become rapid, and are usually shallow and thoracic. The pulse is at this time a very important sign, diagnostically as well as prognostically. Increasing tachycardia goes hand in hand with continuous loss of blood, and is a significant sign. The board-like rigidity of the recti muscles is of no less importance. With few exceptions its presence (constant and marked), was emphasized by every author. Like the pain, it may be confined, more marked over the left rectus muscle and region of the spleen, or it may be and often is present over the entire abdomen. Tenderness is here always found associated with pain and rigidity. Another very important and frequent sign is shifting dullness in the flanks. This is dependent upon the amount of free or clotted blood in the abdomen. Vomiting is occasionally present, and when so is not of the recurrent type as seen in rupture of the intestine. Distention of the abdomen when present is not usually marked. Elliott¹⁴ lays stress on the value of costal resistance or the force encountered in depressing the various segments of the costal arch toward the vertebral column as an important diagnostic sign. Other authors believe pain in the left shoulder or radiating toward it is of great significance. In our series of seven cases it was not recorded. In many of the collected cases, the history and details were very meager. I was, however, able to find the following distribution of signs in this series, including our seven:

	<i>Number</i>	<i>Per Cent</i>
Rapid and increasing pulse rate.	73	57.02
Tenderness of the abdomen or flanks	71	55.4
Pain, local or general.	67	52.3
Rigidity of the recti.	65	50.7
Flank dullness	61	47.6
Pallor	51	39.8
Shock	44	35.9
Vomiting	35	27.7
Dyspnea	15	11.7
Restlessness	13	10.1
Pain in the left shoulder.	10	7.8

In general the predominating symptoms in this condition are those due to hemorrhage.

No symptom or set of symptoms is pathognomonic. Because of this a positive preoperative diagnosis is rarely possible. It should, however, be made provisionally, and early, after a careful and deliberate consideration of all the facts connected with the particular case, such as the history of the injury of the upper abdomen, particularly of the left side; shock; abdominal pain, increasing in intensity; marked resistance and rigidity of the abdominal muscle with tenderness, more especially over the splenic region, with or without dullness in the flanks and other signs of hemorrhage. The absence of bruises, abrasions, discolorations, and ecchymosis should never mislead one, nor should the diagnosis be allowed to be obscured by other frequently accompanying severe injuries. Among such as found in this review may be mentioned nine in whom fractured ribs were found, seven sustaining fractures of other bones, five with accompanying kidney injuries, four with retroperitoneal hemorrhage in the left kidney region, two with liver lacerations, two with ruptures of the pancreas, one with a contusion of the pancreas, two with injuries to the lungs and resulting hemothorax, one with a laceration of the stomach, one with a rupture of the aorta, and many others with minor bruises, contusions, and scalp wounds.

Up to the end of the eighteenth century, all cases of rupture of the spleen were considered absolutely fatal. Sutton¹⁵ showed that occasionally this is not so. He reports having seen in the museum of the Saint Bartholomew Hospital the spleen of a woman who had previously fallen from a window and had broken her femur. Ten days later at post-mortem it was shown that her spleen had been torn across and the torn surfaces had united. There was an encapsulated collection of blood around the organ.

He likewise described another case, where a man had the left side of his abdomen ripped out by a boar, causing the spleen to protrude. The attending physician could neither make out the nature of the organ, hanging out of the wound, nor replace it. Nearly one month later the wound healed, leaving the spleen on the outer surface, in which condition it resembled a tam-o'-shanter cap. Another surgeon, who then saw the case, tied the vessels and removed the spleen. The prognosis depends in a large measure upon the time elapsed between the infliction of the injury and the proper treatment thereof, and is very often made more grave, as it was in our series, by other serious accompanying injuries. The cause of death is usually hemorrhage. Without surgical treatment, the mortality has been placed at 95 per cent. In this series there were three without surgical treatment, all of whom died. In one the result was not stated. In the other 124, operated upon, there were twenty-seven deaths, or a mortality of 21.7 per cent. Splenectomy was performed upon 106 patients, of whom eighty-three or 78.3 per cent recovered and twenty-three or 21.6 per cent died. Fourteen were treated by tamponade (gauze packing), with the result that twelve or 85.7 per cent recovered and two or 14.2 per cent died. Of two treated by suture and tamponade combined, both died. One with suture and partial splenectomy recovered, and one with suture alone died. As the mortality incidental to this condition depends also on the time of the surgical treatment following the onset of the injury, as well as the surgical technic, I have tabulated the results of this series as follows:

RELATION OF TIME OF OPERATION TO MORTALITY

Hours	Operations	Recovered	Died
0- 1	6	3	3
1- 6	28	23	5
7-12	12	10	2
13-24	22	18	4
25-48	8	7	1
49-72	3	2	1
73-96	1	0	1
Days			
5- 8	5	1	4
9-15	3	3	0
16-31	1	1	0
Not stated	39		

Too much importance should not be attached to the above data, however, for not only the technic and the seriousness of the accompanying injuries

but also the condition of the patient at the time of the operation must be taken into consideration.

Treatment must first be centered upon the shock, in which state the subjects are usually found and rushed to the hospital. If treated with heat, morphine, transfusions, and fluids, the patient often shows at least temporary improvement. Prompt action is necessary. Watchful waiting, procrastination, hoping for a change for the better, under the guise of miscalled conservative or symptomatic treatment, imperils success. Loss of every hour now makes recovery less probable. It is better to operate a doubtful case and find perhaps only some slight injury than to permit the sacrifice of a life "by trusting to luck." In order to lose no precious moments, all preparations for operation should be made at once. Local anesthesia alone should be the first choice; and, combined with nitrous oxide, the second. Transfusions of matched blood, if possible, or the intravenous injection of normal saline solution, should be given during or immediately following the operation. Splenectomy, first performed successfully for traumatic rupture in 1893 by Riegner,¹⁶ has steadily gained favor, and is now universally recognized by most authorities as the standard treatment. Not only is it the most rational and certain method of stopping the hemorrhage but also the quickest. Suturing or tamponing of the spleen is not to be relied upon, as proper suturing compels the cutting through of the soft texture of the organ and thus prevents an approximation of the divided edges with sufficient tightness to check the bleeding; while tamponing, which may be of value temporarily, leaves the insidious danger, upon its removal, of a recurrent hemorrhage (Dalton¹⁷). Given a case with the history of severe injury involving the left hypochondrium especially with the slightest indications of internal injury to the spleen, I would advise an immediate exploration of the abdomen. Time does not permit a detailed description of the technic of splenectomy.

The following protocols of cases described below are taken from the records of the Minneapolis General Hospital, and occurred on the services of the various staff members of the surgical department during a period covering the last five years.

Case 1. D-3397. Female, age 15, admitted August 14, 1917, at nine-thirty P. M., with a history of having been injured in an automobile accident, the details of which were not learned. Upon her arrival at the hospital (one half hour following the accident), she was conscious and in shock. Her temperature was 100, her pulse 112, and her

respiration 22. A provisional diagnosis was made of a fracture of the right femur and internal hemorrhage. One hour after admission the patient was taken to the operating room, and under a general anesthetic of ether the abdomen was opened and found full of blood, the bleeding coming from a ruptured spleen and a ruptured pancreas. Both of these organs were sutured, and the spleen further fortified against active bleeding by tamponing. No transfusion of blood was attempted. The patient failed to rally from the operation.

Case 2. F-2537. Female, age 21, admitted April 25, 1920, at 1 P. M. She was conscious, but her condition was stated as being very serious. The history, as given by witnesses, was that an automobile had run over her one-half hour previous to her admission to the hospital. The wheels passed across the abdomen. She was in severe shock and very weak. No external signs of injury were evident. She complained of pain in the right shoulder, and of a great deal of pain in the abdomen, which was rigid and tender. Pulse was rapid and thready. Pallor was marked. A provisional diagnosis of a probable ruptured bowel was made. On the second day following the accident operation, under general anesthesia, was performed. The abdomen contained much free blood, the source of which was found in a lacerated spleen and many small ruptures in the liver. Tamponing of the spleen controlled the hemorrhage. Transfusion was given (400 c.c.), but in spite of this and other stimulants the patient died the following morning.

Case 3. F-6085. Male, age 22, admitted November 14, 1920, at 2:50 P. M. with a history of having been caught and pinned under an automobile truck. The patient was in profound shock, and practically unconscious. Several scalp wounds and a fracture of the upper and middle third of the left femur were present. Under stimulants his general condition seemed to improve. The radial pulse was very rapid, and the heart tones very weak. Respirations were shallow and numbered twenty-four per minute. Pallor was marked and did not improve. No attempt was made to treat the fracture or to do a thorough physical examination. The patient died five hours later. At post-mortem, ruptures of the right kidney, the spleen, and the aorta were found, also scalp wounds, superficial abrasions, and the aforementioned fractured femur.

Case 4. G-4856. Male, age 47, admitted August 18, 1921, at 7:45 P. M., conscious but in shock. Pulse was almost imperceptible at the wrists. A transfusion of 200 c.c. of citrated blood was given. The history was that a popcorn wagon in which he was riding turned over on him. He complained of severe pains in the chest and epigastrium. On physical examination he was found to be tender over the abdomen, more especially on the right side. The whole abdomen was rigid, seemingly more so in the upper right quadrant. His knees were flexed. He refused to be operated upon. His restlessness increased. The respirations were sighing, the blood pressure was 64/22, the pulse rate 122. His condition was steadily becoming worse. At 10:25 P. M., under a general anesthetic, he was operated upon. The abdomen was opened and found filled with dark blood. There was no injury to the liver, but a large laceration of the spleen, several inches in length was disclosed. This was promptly sutured and a solution of saline left in

the abdominal cavity. Transfusion was attempted immediately following the operation, but the patient died before it could be completed.

Case 5. G-4211. Male, age 10, admitted July 10, 1921, with a history of having fallen through a hole in a railroad bridge about one-half hour before admittance to the hospital. He was conscious, in shock, and complained especially of the pain in the left wrist and the inability to use his left hand and about the pain in his abdomen. He was cold and his skin clammy. There was present a compound fracture of the left radius, the head of the bone protruding through the skin, a dislocation of the ulna, fracture of the lower third of the ulna, as well as a fracture of the distal portion of the left humerus. The next morning the abdomen was found to be distended, rigid, and tender. Fourteen hundred c.c. of normal saline were given hypodermatically. At 9:45 his abdomen was opened under local anesthesia. Free blood filled the abdomen. The spleen was found torn almost in two. The vessels were clamped and tied, and the spleen removed. Three hundred c.c. of normal saline solution were poured into the abdomen, after which it was closed. Ten ounces of matched blood were given by transfusion, followed by 500 c.c. of normal saline. Later the fracture and dislocation were properly treated. Blood counts were frequently made, showing a hemoglobin of 75 per cent at the time the patient was discharged from the hospital.

Case 6. G-6413. Male, aged 10, injured in an automobile accident. Whether the wheels ran over him or not could not be ascertained. He was admitted at 5:30 P. M. on October 30, 1921, at which time he was very pale, his pulse very weak and rapid, his respirations shallow and rapid. He was able to move his limbs, but showed increased resistance and tenderness over the abdomen. There was no dullness in the flanks. One hour later his pulse was 136, the blood-pressure 100/70, respirations 40. At 7 P. M., 200 c.c. of whole blood were injected into the buttocks. The pulse rate had increased to 150. One hour later it had increased to 170. Six hundred c.c. of normal saline solution was administered hypodermatically. The next morning his blood-pressure was 92/58, the pulse 170, the abdomen tender and rigid. His condition grew steadily worse. He died that same afternoon. The post-mortem diagnosis read: Rupture of both lungs, massive hemothorax, rupture of spleen, small rupture of the liver, and fracture of the rib.

Case 7. G-3216. Female, age 52, admitted May 19, 1921, at 3:30 P. M., with a history of having been injured in an automobile accident. Her condition was serious, and a history of the accident was unobtainable at that time. The patient was pale, restless, and in a semi-conscious state. Her pulse was slow, the heart action feeble. The blood-pressure reading was 70/42. There was a deep scalp wound at the post-occipital region. Her pupils reacted to light and accommodation. Neck and chest findings were negative. The abdominal wall was flaccid, and a bluish discoloration was present over the left iliac crest. Tenderness over the abdomen and flanks was present. Several bruises on the left leg were seen. The following day the blood-pressure was 102/70, pulse rate 106, respirations 28, the tenderness and the rigidity of the abdomen markedly increased, with tympany in the flanks. She appeared very

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CHART I

NO.	AUTHOR	SEX	AGE	ETIOLOGY	SYMPTOMS	ASSOCIATED INJURIES	OPERATION AND TIME AFTER	RESULTS
1	Riegner	M	14	Fall	Shock, pallor, vomiting, rigidity, dullness in flanks	None	Splenectomy 12 hours	Recovery
2	Picerson	M	10	Blow	Shock, rapid pulse, pain in left shoulder and abdomen	None	Tamponade 20 hours	Recovery
3	Trendelenburg	M	45	Blow	Shock, rapid pulse, pain, restlessness, flank dullness	None	Splenectomy 24 hours	Died
4	Trendelenburg	M	35	Fall	Pain, pallor, flank dullness	None	Splenectomy 5½ hours	Died
5	Trendelenburg	M	21	Run over	Pain, pallor, rapid pulse, tenderness, rigidity, flank dullness	None	Splenectomy 20 hours	Died
6	Trendelenburg	M	17	Run over	Pain, pallor, rapid pulse, flank dullness, tenderness, vomiting	None	Splenectomy 5 hours	Recovery
7	Trendelenburg	F	7	Run over	Tenderness, flank dullness	Lacerated kidney	Splenectomy 2 hours	Died
8	Trendelenburg	M	18	Run over	Pain, rigidity, dyspnoea, vomiting, flank dullness	None	Splenectomy 24 hours	Recovery
9	Krabbel	M	9½	Fall	Pain, pallor, dyspnoea, rigidity, tenderness, flank dullness	None	Tamponade 1½ hours	Recovery
10	Perthes	M	18	Run over	Pain, rigidity, flank dullness, vomiting	None	Splenectomy 24 hours	Recovery
11	Gester	F	4	Run over	Distention, signs of fluid in abdomen	None	Tamponade 48 hours	Died
12	Ballance	M	10	Fall	Shock, pain, tenderness, rapid pulse	Fracture both arms	Splenectomy Not stated	Recovery
13	Delbet	M	9	Blow	Shock, pallor, pain, flank dullness	None	Splenectomy Not stated	Recovery
14	Beck	M	19	Run over	Shock, signs of hemorrhage	None	Splenectomy Not stated	Recovery
15	Madlener	F	10	Fall	Shock, pallor, tenderness, rigidity, flank dullness, vomiting	None	Splenectomy 7 hours	Recovery
16	Simpson	M	27	Fall	Pain, rapid pulse, rigidity, tenderness, dyspnoea	None	Splenectomy 6 hours	Recovery
17	Cohen	M	23	Fall	Pain, pallor, rapid pulse, tenderness, flank dullness	None	Splenectomy 9 hours	Died
18	Blauen	M	12	Fall	Vomiting, rapid pulse, pallor, rigidity, tenderness, dullness	None	Splenectomy 40 hours	Recovery
19	Blauel	M	19	Kick	Vomiting, rapid pulse, rigidity	None	Splenectomy 4½ hours	Recovery
20	Frank	M	30	Fall	Shock, pallor, signs of internal bleeding	None	Splenectomy 24 hours	Recovery
21	Georgi	F	4	Run over	Pallor, rapid pulse, rigidity, tenderness, flank dullness	Skin abrasions	Splenectomy 8½ hours	Recovery
22	Georgi	F	8	Fall	Shock, rapid pulse, rigidity, tenderness, flank dullness	None	Splenectomy 1 hour	Died
23	Riegner	M	16	Crush	Pain, vomiting, flank dullness	None	Splenectomy 4 hours	Recovery
24	Savor	F	31	Crush	Pain, flank dullness, signs of internal hemorrhage	None	Splenectomy 20 hours	Recovery
25	Bardenhauser	M	..	Fall	Shock	Fractured ribs and haemothorax	Splenectomy 11 days	Recovery
26	Heusner	M	17	Blow	Pain, radiating to left arm, pallor, tenderness	None	Splenectomy 9 days	Recovery
27	Jordan	M	23	Fall	Pain, pallor, dyspnoea, dullness in flanks, vomiting	None	Splenectomy 9½ hours	Recovery
28	Dalton	M	55	Kick	Pain, increasing pulse rate, rapid respirations	None	Tamponade Not stated	Recovery
29	Loison	M	22	Kick	Vomiting, pain, signs of internal bleeding	None	Tamponade 25 hours	Recovery
30	Parker	M	12	Blow	Pain, signs of intra abdominal injury	None	Tamponade Not stated	Recovery
31	Rehn	F	19	Fall	Vomiting, dullness in flanks, progressively weaker	Laceration of the stomach	Partial splenectomy, suture	Recovery
32	Kellog	M	40	Run over	Tenderness, signs of internal bleeding	Fracture of ribs	Splenectomy ½ hour	Died
33	Demoulin	M	51	Kick	Shock, signs of internal bleeding on fifth day	Fracture of ribs	Splenectomy 5 days	Died
34	Roddick	M	..	Not stated	Shock, most pulseless	Fracture of ribs, rupture of kidney	Splenectomy Not stated	Died
35	Veron	M	..	Kick	Vomiting, pallor, rigidity	None	Splenectomy 24 hours	Died
36	Venon	M	..	Kick	Pallor, vomiting, tenderness, signs of internal bleeding	Contusion of pancreas	Splenectomy 21 hours	Died
37	Eichel	M	20	Run over	Rapid pulse, tenderness, flank dullness, dyspnoea, distention	Subcutaneous haematoma, lacerated kidney	Splenectomy 6 hours	Died

NO.	AUTHOR	SEX	AGE	ETIOLOGY	SYMPTOMS	ASSOCIATED INJURIES	OPERATION AND TIME AFTER	RESULTS
38	Eichel	M	23	Fall	Shock, pain, also in left shoulder, dullness in splenic area	None	Splenectomy 8½ hours	Recovery
39	Coville	F	26	Fall	Pain, round swelling under left costal arch	None	Splenectomy 15 days	Recovery
40	Wilms	F	30	Fall	Shock, rigidity, rapid pulse, dullness in flanks	None	Splenectomy 4½ hours	Recovery
41	Karewski	F	11	Crush	Shock, vomiting, dullness in flanks and back	Fracture of clavicle	Splenectomy 30 days	Recovery
42	Flucker	M	..	Fall	Tenderness and dullness in flanks and splenic area	None	Splenectomy 24 hours	Recovery
43	Friedheim	M	4	Run over	Vomiting, pallor, pain, rapid pulse, rigidity, tenderness	None	Splenectomy 4 hours	Recovery
44	Friedheim	M	23	Kick	Pain, pallor, rigidity, tenderness	None	Splenectomy 3 hours	Recovery
45	Borlous	M	48	Run over	Pain, tenderness, pallor, rapid pulse, flank dullness	None	Splenectomy 4 hours	Recovery
46	Houghton and Legg	F	12	Fall	Rapid pulse, pain, rigidity, tenderness	None	Splenectomy 24 hours	Recovery
47	Houghton and Legg	F	7	Run over	Shock, pallor, rigidity, rapid pulse, restlessness	None	Splenectomy 1 hour	Recovery
48	Beaumont and Hausman	M	17	Run over	Restlessness, distention of abdomen	Dislocated clavicle, fracture of scapula	Splenectomy Not stated	Recovery
49	Shield	M	25	Kick	Shock, rigidity, tenderness, dullness in splenic area	Fracture left olecranon, scalp wounds	Splenectomy 3 hours	Recovery
50	Lukis	M	7	Run over	Shock, pallor, restlessness, rapid pulse, tenderness	None	Splenectomy 53 hours	Recovery
51	Pitts and Ballance	M	36	Fall	Pain, pallor, flank dullness, almost pulseless	None	Splenectomy 7½ hours	Recovery
52	Pitts and Ballance	M	10	Blow	Shock, pallor, rapid pulse, rigidity, tenderness, dullness	None	Splenectomy 5 days	Recovery
53	Pitts and Ballance	F	45	Run over	Pallor, almost pulseless, dullness in flanks	None	Splenectomy 24 hours	Recovery
54	Alexander	M	34	Not stated	Pain, vomiting, rapid pulse and respirations	None	Splenectomy 43 hours	Recovery
55	Harrison and Eve	M	..	Fall	Pain and abdominal distention	None	Splenectomy Not stated	Recovery
56	Latouche	M	10	Fall	Pain, distention, rapid pulse	None	Splenectomy 21 hours	Recovery
57	Reagle	M	11	Fall	Pain, rigidity, rapid pulse, flank dullness	None	Splenectomy ½ hour	Recovery
58	Heaton	M	9	Run over	Pallor, pain, restlessness, flank dullness	None	Splenectomy 5½ hours	Recovery
59	Ramstedt	M	..	Kick	Flank dullness, restlessness, rigidity, pallor, rapid pulse	None	Splenectomy Not stated	Recovery
60	Nost-Kolb	M	38	Kick	Pain, tenderness, vomiting, shock, pallor, dullness	None	Splenectomy 96 hours	Died
61	Noetzel	M	..	Run over	Shock, rapid pulse, dullness over splenic area	None	Splenectomy 3 days	Recovery
62	Berger	M	19	Fall	Pain, pallor, rapid pulse, tenderness, rigidity, dullness	None	Splenectomy 24 hours	Recovery
63	Hörz	M	29	Kick	Pain, pallor, rapid pulse, tenderness, rigidity, anxiety	None	Splenectomy 4½ hours	Recovery
64	Neck	M	16	Blow	Vomiting, pain, pallor, rapid pulse, distention, dyspnoea	None	Splenectomy 48 hours	Recovery
65	Straus	M	17	Fall	Vomiting, shock, pain, rapid pulse	None	Not stated	Not stated
66	Fontoyot	F	23	Blow	Shock and signs of internal bleeding	None	Splenectomy 2 hours	Recovery
67	Leverenz	M	21	Run over	Signs of internal bleeding	None	Splenectomy 2 hours	Recovery
68	Brogsetter	M	27	Run over	Pallor, pain, rigidity, tenderness, flank dullness, fast pulse	Retropertitoneal hemorrhage	Splenectomy 8 hours	Recovery
69	Elliott	M	13	Run over	Pain, tenderness, rigidity	None	Splenectomy 6 hours	Recovery
70	Haynes	M	9	Run over	Shock, rigidity, tenderness, rapid pulse	None	Splenectomy Not stated	Recovery
71	Brewster	F	6	Run over	Tenderness, rigidity, distention, rapid pulse, vomiting	Bruises of back	Tamponade Not stated	Recovery

NO.	AUTHOR	SEX	AGE	ETIOLOGY	SYMPTOMS	ASSOCIATED INJURIES	OPERATION AND TIME AFTER	RESULTS
72	Sherwood	M	40	Fall	Shock, pain, rigidity, vomiting, pallor, rapid pulse, thirst	None	Splenectomy Not stated	Recovery
73	Vorwerk	M	24	Blow	Pain, vomiting, pallor, rapid pulse, rigidity, dullness (flank)	None	Splenectomy 3 hours	Recovery
74	Vorwerk	M	16	Fall	Rigidity, rapid pulse, vomiting, tenderness	Bruises	Splenectomy Not stated	Recovery
75	Vorwerk	M	17	Fall	Rigidity, tenderness, distention, shifting dullness (flank)	Contusions, fracture left humerus	Splenectomy 6½ hours	Recovery
76	Vorwerk	M	24	Run over	Tenderness in abdomen and flanks	Abrasions	Splenectomy Not stated	Recovery
77	Vorwerk	M	24	Crush	Pallor, shock, rigidity, tenderness, vomiting, rapid pulse	Fracture of ribs, subcutaneous emphysema	Splenectomy 9 hours	Died
78	Vorwerk	M	14	Kick	Pain, tenderness, rigidity, distention	Laceration of pancreas	Splenectomy Not stated	Recovery
79	Vorwerk	M	50	Run over	Vomiting, pain, distention	Fracture of ribs	Splenectomy Not stated	Died
80	Vorwerk	M	45	Run over	Pain, dyspnoea, shock, rapid pulse	Fracture of ribs	None	Died
81	Fagge and Mar	F	13	Blow	Pain in shoulder, tenderness, rigidity, rapid pulse, pallor	Bruises	Splenectomy Not stated	Recovery
82	Ross	M	21	Fall	Pallor, pain, rigidity, tenderness, distention	None	Tamponade	Recovery
83	Hahn	M	..	Fall	Pain, tenderness, shock, rigidity, tenderness, weak, rapid pulse	None	Splenectomy 6 days	Died
84	Henderson	M	35	Strain	Pain, thirst, pallor, rapid pulse, rigidity, dullness, tenderness	None	Splenectomy Not stated	Recovery
85	Henderson	F	25	Fall	Tenderness, distention, flank dullness	None	Splenectomy Not stated	Recovery
86	Henderson	F	19	Fall	Pallor, shock, dyspnoea, flank dullness, rigidity, rapid pulse	Laceration left kidney	Splenectomy Not stated	Recovery
87	Henderson	M	45	Run over	Shock, rapid pulse, pain, rigidity, shifting flank dullness	Laceration kidney, fracture of ribs	Splenectomy Not stated	Died
88	Henderson	M	35	Blow	Tenderness, rigidity	None	Splenectomy Not stated	Died
89	Jones	M	12	Fall	Pallor, rapid pulse, flank dullness	None	Splenectomy 48 hours	Recovery
90	Jones	M	37	Blow	Pallor, pain, flank dullness, signs of hemorrhage	None	Splenectomy 24 hours	Recovery
91	Clarke	M	32	Fall	Pain, rapid pulse, tenderness, dullness in flanks	None	Splenectomy 7 hours	Recovery
92	Rait	M	32	Blow	Pain, tenderness, rapid pulse, shifting dullness	None	Splenectomy Not stated	Recovery
93	Scheult	M	13	Fall	Pain, tenderness, rigidity, slight distention, tympany	None	Splenectomy 12 hours	Recovery
94	Eisendrath	M	10	Blow	Pallor, restlessness, thirst, flank dullness, tympany	None	Splenectomy Not stated	Died
95	Brewer	M	14	Fall	Pain, vomiting, pallor, rapid pulse, tenderness, rigidity	None	Tamponade	Recovery
96	Ballock	F	17	Kick	Pain, vomiting, rapid pulse, tenderness, rigidity, dullness	None	Splenectomy Not stated	Died
97	Boulton	M	12	Crush	Pallor, rigidity, tenderness, flank dullness, restless	Retroperitoneal hemorrhage	Splenectomy Not stated	Recovery
98	Mixer	M	25	Blow	Vomiting, tenderness, rigidity, flank dullness	Slight bruises	Splenectomy Not stated	Recovery
99	Gibbon	M	..	Fall	Shock, pallor, rapid pulse, distention, flank dullness	Retroperitoneal hemorrhage	Tamponade	Recovery
100	Hitzrot	M	7	Run over	Shock, rapid pulse, rigidity, tenderness, flank dullness	None	Splenectomy 4 hours	Recovery
101	Hitzrot	M	14	Fall	Pain, dyspnoea, shock, rigidity, tenderness, rapid pulse	None	Splenectomy 1¼ hours	Recovery
102	Fauntleroy	M	24	Fall	Pain, tenderness, rigidity, pain in left shoulder, thirst	Contusions of chest and abdomen	Splenectomy 3 hours	Recovery
103	Lillienfeld	M	21	Fall	Tenderness, distention, flank dullness	None	Splenectomy 12 hours	Recovery
104	Musham	M	10	Run over	Pallor, almost pulseless, shifting abdominal dullness	Contusions of chest wall	Splenectomy Not stated	Recovery

NO.	AUTHOR	SEX	AGE	ETIOLOGY	SYMPTOMS	ASSOCIATED INJURIES	OPERATION AND TIME AFTER	RESULTS
105	Walker	M	34	Kick	Pain, tenderness, shock, thirst, rigidity, flank dullness	None	Splenectomy 4½ days	Died
106	Plumptre	M	..	Run over	Shock, pallor, rapid pulse, thirst, distention, tenderness	None	Splenectomy 1 hour	Died
107	Plumptre	M	..	Kick	Pain, pallor, rigidity, tenderness, flank dullness	None	Splenectomy Not stated	Recovery
108	Plumptre	M	..	Blow	Shock, pallor, pain, rigidity, tenderness, rapid pulse	None	Splenectomy 27½ hours	Recovery
109	Palmer	M	19	Fall	Shock	None	Tamponade Not stated	Recovery
110	Livingston	M	27	Run over	Dyspnoea, rigidity, rapid pulse	Abrasions	Splenectomy 22 hours	Recovery
111	Jones	M	10	Fall	Signs of intra-abdominal injury	None	Splenectomy Not stated	Recovery
112	Levy	M	18	Blow	Pain, dyspnoea, vomiting, thirst, pallor, rigidity, tenderness	None	Splenectomy Not stated	Recovery
113	Cam	F	31	Blow	Pallor, pain, rigidity, flank dullness, rapid pulse	None	Splenectomy 4 hours	Recovery
114	Leitner	M	20	Fall	Pain, shock, rigidity	None	Tamponade 1 hour	Recovery
115	Mulligan and Hennington	M	32	Fall	Pain, in left shoulder, rapid pulse, rigidity, tenderness	Retropertitoneal hemorrhage	Suture and tamponade 24 hours	Recovery
116	Hutcheson	M	30	Crush	Pain, tenderness, flank dullness, rapid pulse	Liver rupture	Splenectomy 7 days	Died
117	Barnes	M	19	Fall	Pain, vomiting, rigidity, tenderness	Left Colles fracture and abrasions	Tamponade 24 hours	Recovery
118	Willis	M	28	Crush	Pain in left shoulder, thirst, rigidity, tenderness, dullness	None	Splenectomy 27 hours	Recovery
119	Willis	M	14	Blow	Rigidity, tenderness, pain in left shoulder, flank dullness	None	Splenectomy Not stated	Recovery
120	Willis	M	46	Crush	Pain in left shoulder, tenderness, rigidity	None	Splenectomy Not stated	Recovery
121	Willis	M	15	Auto accident	Pain, rigidity, rapid pulse	None	Splenectomy 24 hours	Recovery
122	Robitshek	F	15	Auto accident	Shock, rapid pulse	Ruptured pancreas	Tamponade 2 hours	Died
123	Robitshek	F	21	Run over	Shock, pain, rigidity, pallor, rapid pulse, tenderness	Contusion of liver	Tamponade 50 hours	Died
124	Robitshek	M	47	Crush	Shock, pain, tenderness, rigidity	None	Suture 3 hours	Died
125	Robitshek	M	22	Crush	Shock, pallor, rapid pulse	Rupture of kidney, rupture of aorta, fracture of femur	Not operated	Died
126	Robitshek	M	10	Run over	Shock, rapid pulse, rigidity, tenderness, flank dullness	Rupture both lungs, haemothorax, fracture of ribs	Not operated	Died
127	Robitshek	M	10	Fall	Shock, rigidity, pain, tenderness	Fracture of humerus, radius, elbow dislocation	Splenectomy 16½ hours	
128	Robitshek	F	52	Auto accident	Pain, tenderness, rigidity, restlessness	None	Splenectomy 21 hours	

pale and slightly irrational. The urine examination showed a trace of albumin and an occasional hyaline and granular cast. At 1 P. M. that day she was operated under a local anesthetic. One quart of clotted blood was removed from the abdomen. The spleen was found lacerated in two places and was removed. Her recovery was uneventful. On discharge from the hospital, five weeks later, her hemoglobin had reached 80 per cent.

As a result of this study, I have arrived at the following conclusions:

1. Traumatic rupture of the spleen occurs much more frequently in males.
2. One-half the cases occur in children and young adults.
3. No pathognomonic symptoms exist. In general, the symptoms are those of hemorrhage.
4. Splenectomy, performed early, is probably the most reasonable and most efficient treatment.

I wish herewith to thank Dr. W. E. List, Superintendent of the Minneapolis General Hospital, for his courtesy in permitting me to examine the records of the above cases.

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DISCUSSION

DR. ARTHUR T. MANN, Minneapolis: It is a pleasure to discuss a paper so clearly and so simply put, so that the ideas presented in it stand out prominently.

An absolute diagnosis of rupture of the spleen is seldom made before operation. When the surgeon sees the case it is primarily one of shock, abdominal injury, hemorrhage. It may be a rupture of the kidney, a rupture of the liver, a rupture of the bowel, and the practitioner must make these differentiations. We have then a set of symptoms common to all these conditions—shock, with a pulse at first slow and feeble, and then becoming more rapid and more feeble as the rate increases; a pinched, pale, clammy face and hands; a slow, shallow respiration. These constitute the symptoms of shock. Then we may have hemorrhage, with a pale, cold, clammy skin, the respirations beginning to increase in rapidity from air hunger; and air hunger is the cardinal symptom of hemorrhage. When the clinician sees the case the rapid and feeble pulse is characteristic; there is a loss of the artery under the finger between beats; the heart pumps a little blood and then the tension is gone. Besides these common signs, we have the local signs. If the local signs are over in the left upper quadrant, the presumption is a rupture of the spleen. That is as close as you can get to it. If the signs are over the upper right quadrant, a little anterior, it is probably rupture of the liver. With rupture of the kidney, we will get bloody urine if we catheterize the bladder. In rupture of the bladder, pain is characteristic. It is more or less characteristic of all these conditions, but the pain is over the spleen in rupture of the spleen and over the bladder in rupture of the bladder. It is over the liver in rupture of the liver, etc. With involvement of these organs, the abdomen becomes hard and board-like. It tries to protect the injured organ inside. In rupture of the stomach or bowel, the board-like rigidity of the abdomen is more pronounced because of the great irritation caused by their contents.

DR. A. R. COLVIN, St. Paul: The ability to discuss a paper of this kind presupposes really a good deal of experience, and the interesting thing is the fact that during a

service of 15 years at a hospital rich in traumatism,—the City and County of St. Paul,—I have not seen a case of rupture of spleen except one which was due to a gunshot injury, so that really in a sense I am not competent to discuss the paper. However, I was willing to discuss it from the point of view of abdominal injuries in general.

Because a diagnosis of rupture of the spleen is not usually made before operation. If we wait until all of the abdominal symptoms manifest themselves—hemorrhage and its consequences—operation will not usually be successful, so the point really centers upon an early recognition of a severe enough abdominal injury to warrant immediate surgical intervention.

In cases of abdominal trauma, I have been successful in a few where I have not waited for anything like the classic symptoms of hemorrhage, but have been impressed with the fact, after a thorough study, that the patient is seriously injured. In this present day, development of surgery is such that a simple exploratory laparotomy in severe trauma is a much less risk than waiting for more positive indications.

The question of what one should do when one finds an injury of the spleen seems to be settled by the statistics the doctor has given us. The patient with gunshot wounds of the spleen that I have operated on fortunately recovered, and after taking out the spleen I have wondered if I could not have stopped that amount of bleeding by less heroic measures.

The function of the spleen, of course, is still in doubt. We do not know that it has either an external or internal secretion. It is supposed to deal with blood destruction, and yet it seems to me too important an organ to destroy or remove too readily. Ever since the time I operated on this case of gunshot wound of the spleen and removed it. I have wondered what else one could do in such a predicament again.

In thinking over the material for this discussion and reading of the experiences of others and noting the fact that very often we have an accessory spleen, and that on one occasion somebody operated some time after the spleen was removed, and discovered remnants of spleen tissue engrafted upon the peritoneum.

I have wondered whether, in a case in which one is in doubt, it would be sufficient to ligate the pedicle of the spleen and hope that perhaps through the proper cardinal ligaments of the spleen sufficient blood supply would not be obtained to let the spleen act and go on with its function.

DR. EDWARD BRATRUD, Warren, Minn.: I believe that no one has reported a case of rupture of the spleen which occurred only from muscular trauma. However, believe there are one or two such cases on record. I want to report briefly two cases from records at Warren.

Last November a girl of sixteen tripped on the sidewalk with no apparent injury. She was brought into the hospital in the course of an hour, and her symptoms were those of shock, falling blood-pressure, and a little pain up in the left quadrant of the abdomen, which caused us to do an exploration, and we found a bleeding spleen and the abdomen half-filled with blood. The spleen was removed. This was followed by transfusion and repeated infusions, and she got along very nicely.

The second case occurred about two months ago. The patient was a man, aged 30, who was kicked by a horse over the left kidney. His symptoms were chiefly those of shock, but he had hematuria. We explored his kidney and found it was badly lacerated. We did a nephrectomy, and decided to look into the peritoneal cavity, which we did. We also found a badly lacerated and bleeding spleen, which we removed. We anticipated the shock in this case and gave him the usual treatment, and he got along very nicely. I might add the blood picture in these cases, which we are following up from time to time, is in accordance with the accepted findings.

DR. E. C. ROBISHEK, Minneapolis (closing): I wish to thank the gentlemen for their kind discussion. I think Dr. Bratrud is to be congratulated on having successfully removed the kidney and spleen at the same operation. There are only two cases in my series where the kidney and spleen were both removed at the same time. One of these patients died.

I agree with Dr. Mann and Dr. Colvin that a preoperative diagnosis is almost out of the question, because the symptoms of injury to the abdominal organs are very much the same, but they call for an exploratory operation, which should not be delayed. Most of us are willing to procrastinate, and in the meantime the patient becomes worse. I would rather open the abdomen and find a slight injury than sacrifice the patient's life by waiting too long.

PROSTATECTOMY FROM THE STANDPOINT OF THE GENERAL PRACTITIONER*

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As the title indicates, this paper is intended more for the general practitioner than the specialist. I wish to show by analysis of a series of fifty consecutive cases, what we may reasonably promise a patient suffering from prostatic obstruction in the way of cure and a comfortable existence thereafter.

Prostatic obstruction is a disease of middle and old age with definite symptoms of onset, existing for varying periods of time before enough damage is caused by retention of urine to attract the patient's attention to his failing health. Two early symptoms are frequency and slowing up of the urinary stream. A slight difficulty in starting the urine and more or less dribbling at the end of urination will be noted in the majority of cases. Urine may be passed six to eight times during the day and one to four times at night. As time goes on, these symptoms become more pronounced, and often an exposure to cold, a long automobile ride,

a full bladder unrelieved will result in more or less complete retention of urine. This acute attack may be relieved by catheterization or such local treatment as may be indicated, only to recur sooner or later on much less provocation than formerly, and will not be so easily relieved. Inability to completely empty the bladder results in a certain amount of constant urinary retention. The retained or residual urine eventually becomes infected, and through its irritant action on the bladder mucosa causes frequent urination. As the residual urine increases in amount a back pressure on the kidneys is produced, which gradually impairs their function. The infected urine may eventually reach the kidneys and through infection greatly increase the danger of kidney complications.

Urinary complaints in men of forty or more should always demand an investigation of the condition of the prostate, regardless of the fact that the urine may appear normal. Some individuals carry a large residual urine free from pus for long periods of time before it becomes infected. In others, the urine may contain pus from a few cells to large quantities. If there is a palpable enlargement of the prostate, the bladder should be examined for retention. The amount of residual urine is determined as follows: The patient is directed to empty his bladder completely; he is then given an anterior urethral irrigation; the bladder is catheterized aseptically. The urine thus obtained will be the amount of residual. If there be four to six ounces or more, one is justified in referring the patient for a special examination and possible relief of the obstruction by surgical treatment.

Often the patient does not feel sick enough to consider surgical treatment, so he naturally wishes to know what the prospects are for cure; how long he will be confined to the hospital, and how he will get along in after life. In order to determine the prognosis, a study has been made of fifty suprapubic prostatectomies. Analysis of symptoms revealed the following: The youngest case in the series was fifty-six years of age, and the oldest was eighty-two years. The average age was sixty-six and one-half years.

Difficulty and frequency of urination existing from one month to twenty years were the first symptoms noted. Twenty per cent complained of frequency only. Thirty-two per cent complained of difficulty in starting, and dribbling at the end of urination. Forty-eight per cent complained of both

*Read before the Southern Minnesota Medical Association at Mankato, December, 1922.

frequency and difficulty. On admission to the hospital 60 per cent had complete retention, 16 per cent had practiced self-catheterization for periods of from one month to five years. Residual urine varied from 60 c.c. to complete retention and contained pus in varied amounts from a few cells to thick pus drawn off at the end of catheterization.

I wish to emphasize that attempts to enter the bladder forcibly in cases of complete retention by means of metal catheters or sounds should be condemned. It is far better to aspirate the distended bladder suprapubically and remove a portion of the urine. The aspirating needle may be left in situ to keep up a slow continuous drainage of urine until arrangements can be made for suprapubic cystotomy.

PREOPERATIVE PREPARATION

In twenty-two cases the bladder was drained suprapubically immediately on admission. They were cases of complete retention that had been severely traumatized before coming to the hospital by ineffectual attempts to pass rubber or metal catheters. A mushroom catheter was introduced into the bladder suprapubically under local anesthesia. The bladder was immediately refilled to capacity with boric acid solution, and the kidneys were decompressed by slow withdrawal of the fluid. Twenty-three cases were treated by gradual withdrawal through the indwelling catheter. Five cases that could not tolerate indwelling catheter on account of pain and tenesmus required drainage suprapubically. Two cases required a long period of preliminary treatment, for one hundred seventy and one hundred seventy-nine days, respectively. The remaining forty-eight cases varied from six to fifty-two days with an average of twenty days. During the entire preoperative period the twenty-four-hour output of urine and its specific gravity was observed daily. The phthalein test was applied in each case and repeated on one or more occasions until a fairly accurate idea of kidney efficiency was obtained. An x-ray examination made in each case demonstrated vesical calculi in three. Cystoscopy was carried out only where the instrument could be easily introduced without trauma. Diverticuli were demonstrated in two cases by this method.

TYPE OF OPERATION

The two-stage method was performed in twenty-seven cases. The remaining twenty-three were sub-

jected to the one-stage operation. They were of a more vigorous type and considered better operative risks. Protection of the prevesical space by careful packing, aspiration of the bladder before opening, the use of drainage and Dakin fluid for several days prevented infection of that area. The longest period of postoperative drainage was ten weeks, the shortest two weeks, with an average of three and one-half weeks.

COMPLICATIONS

Malignancy was positively diagnosed by microscopical section of removed tissue in 12 per cent of the cases. In three, malignancy was suspected on rectal examination made on admission to the hospital. In these suspected cases, radium was implanted into the lowermost portion of the capsule at the time of operation.

Hemorrhage.—There were no cases of primary hemorrhage, but were controlled by suture, packing, or use of the Hagner bag. One case developed severe secondary hemorrhage on the second day, six hours after the packing had been removed. The wound was reopened and hemorrhage was controlled by insertion of a Hagner bag. A second case developed hemorrhage three and one-half weeks after operation, making it necessary to reopen the suprapubic wound; upon retracting the bladder, a bleeding vessel could be seen at the edge of the prostatic pouch. This was controlled by suture.

Obstruction.—Two cases passed no urine per urethram and the suprapubic wound failed to close. In the first, a cystoscope, introduced into the bladder through the suprapubic sinus, with a sound in the urethra, showed a tag of mucosa grown across the prostatic opening. This was removed and the obstruction was permanently relieved. The same procedure followed in the second case demonstrated a narrowing of the bladder neck. Dilation with sounds relieved the obstruction.

Epididymitis.—Three cases developed epididymitis; except for temporary discomfort, convalescence was not interfered with.

MORTALITY

There were four deaths following operation. One patient, aged sixty-eight, died suddenly four hours after operation from embolus. The second death was due to uremia. The patient, aged 72, was operated on after four weeks of preliminary preparation. His daily output of urine had reached 1,800

c.c. with a specific gravity of 1,009; phthalein test showed a functional capacity of 35 per cent in two hours. The third case, aged seventy, died of pneumonia twenty-seven days after operation. The fourth, aged seventy-six, died of shock three hours after operation. There was very little blood lost during operation and no sign of postoperative hemorrhage.

Forty-six questionnaires were sent to former patients to determine the mortality and morbidity after varying periods of time since operation. Replies were received from thirty-nine. There were seven deaths reported. One patient, aged 73, died of influenza and pneumonia six years after operation. One, aged seventy, died of tuberculosis five years after operation. One, aged seventy-nine, died of heart trouble three years after operation. One, aged 73, died of cancer of the bowel three years after operation. One, aged 62, died of cancer of the stomach two years after operation. One, aged 66, died six months after operation of actinomycosis of the lungs, and one, aged 67, died four months after operation of cerebral hemorrhage.

Three malignant cases were traced. Two died of cancer as above stated. One, at the end of a year, is living and well. He has had no symptoms of recurrence up to the present time. The remaining thirty-two cases report that they are all enjoying good health:

10 years after operation.....	1
7 years after operation.....	2
6 years after operation.....	3
5 years after operation.....	3
4 years after operation.....	3
3 years after operation.....	4
2 years after operation.....	8
1 year after operation.....	8

One patient, aged 68, operated on one year ago, whose work requires much heavy lifting, states that he has a slight incontinence on severe muscular exertion; otherwise, he is perfectly well.

All admit that they can pass urine freely and easily; that there has been no obstruction at any time since operation, and that they consider themselves cured.

From a study of the above series, I feel firmly convinced that earlier operations in prostatic obstruction will reduce mortality and shorten both the preoperative and postoperative periods. I can

see no reason why operation for prostatic obstruction should be deferred until the patient's kidneys are so damaged by back pressure that he is on the verge of uremia; until his heart is so weakened by myocardial degeneration as to make operation a grave risk; until infection has reached the kidneys, thereby greatly increasing the danger of kidney complications; and until cancer cells infiltrate the surrounding structures and metastasize to bone and other tissues of the body.

The responsibility of the general practitioner lies in the realization of the insidious onset of this disease; that frequency and failing stream may exist for a period of years in the majority of cases and that it is estimated that from 12 to 25 per cent become malignant. He must recognize the importance of a careful investigation of the prostate as a routine in the general examination of all men over forty. By so doing, a larger percentage of these patients will be discovered early enough to give them a safe operation, easier and shorter convalescence, and permanent relief.

DISCUSSION

DR. WARREN A. DENNIS, St. Paul: Doctor LaRose has made a very concise analysis of these fifty cases. I think the conclusions he has reached are those we would all endorse. These patients should be operated upon earlier than they ordinarily are. Doctor LaRose says he can see no reason why operation should be deferred; there is just one reason, and that is the patient will not consent. Most men will not consent to a prostate operation until they have had one or two attacks, with complete retention. That is the principal reason why we cannot get them earlier. What he says about examination is absolutely correct; every man over forty years of age ought to have a rectal examination as part of his routine examination. If this is made and indications are present that prostatic enlargement is going on and some symptoms are present, his mind can be prepared so that when the time comes that this condition is more marked he will be better prepared to submit to operation.

Dr. Hugh Young reported a series of over two hundred cases of perineal prostatectomy without a single death. This is most remarkable. I do not believe that that record is due to the fact that they had been done by the perineal method, but to the fact that these patients were extremely well prepared for operation. Now this is the most important thing in connection with the whole matter. They should be treated with extreme care, as Doctor LaRose has said. When obstructed, the obstruction must be relieved gradually; they must be catheterized with regularity, or even a suprapubic drainage done so that all back pressure is removed from the kidneys. A careful study must be made of the function of the kidneys by any one of the various tests, or, better still, by all; and patients should not be submitted to operation until the conditions are right.

As the result of an experience which we had something like a year ago, in a case of malignancy of the prostate in which radium was used, it occurred to us to see what could be done with radium in cases of benign enlargement of the prostate, and we have treated five of these patients by means of radium. The radium, in the form of needles, is introduced into the prostate through the perineum under local anesthesia, and is practically painless. In these cases which we have treated in this way there is very definite diminution in the amount of prostatic tissue, and it would seem to us from these few that it is entirely possible to reduce the mass of the lateral lobe, certainly to such an extent that they will not interfere with the act of urination. The middle lobe, I think, will be the difficult one to handle, and whether or not it will be possible to reduce that sufficiently so that a man is free from any great amount of residual urine I am not prepared to say. However, we plan to continue trying this out in cases which are difficult to get ready for a radical prostate operation and in those who are unwilling to submit to it.

DR. V. J. LAROSE (closing): The general practitioner often sees cases of prostatic obstruction in the early stages, long before the specialist does. The object of this paper is to impress upon the general practitioner the advantages of earlier operation in these cases.

THE OBLITERATION OF BONE CAVITIES IN CHRONIC OSTEOMYELITIS BY FREE FAT TRANSPLANTATION. A PRELIMINARY REPORT, CLINICAL AND EXPERIMENTAL*

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The obliteration of bone cavities in chronic osteomyelitis presents a rather difficult problem in certain locations. This is particularly true of cavities located in the upper end of the tibia. The proximity of the knee joint and the liability of fracture following the removal of too much cortical substance from the anterior portion of this bone often makes impossible the usual procedure of creating a shallow gutter which the soft parts will fill or which will heal by granulation. In fact, one is unable, in certain cases, to entirely remove the roof of a cavity of this sort without danger of opening the knee joint.

Many substances have been advocated for use in filling defects of this type. Senn states that Lesser

made observations in Lister's wards in 1876 with special reference to the organization of blood clots in aseptic wounds and reported his observations in the *Deutsche Zeitschrift f. Chirurgie*, Vol. III. Neuber, as early as 1879, experimented with blood clots as a method of promoting healing in bone necrosis. Hamilton (*Edinburgh Medical Journal*, Nov., 1881) advocated the use of the aseptic sponge for soft part defects, but apparently this method was but little used for bone cavities.

Schede, in 1886, described his method of treating bone cavities. He applied an Esmarch's constrictor, removed all dead or diseased bone, disinfected the cavity and sutured, but left a small opening at the top of the cavity which was covered with protective silk, thus obtaining the moist blood crust. Lauenstein, at a meeting of the German Congress of Surgeons in 1888, reported 74 cases treated by this method which proved successful in 64 instances and failed in 10.

In 1889 Senn published his article "On the Healing of Aseptic Bone Cavities by Implantation of Antiseptic Decalcified Bone," reporting several cases in which complete obliteration of the cavity and ultimate cure were obtained.

Many other materials have been advocated such as catgut, cellulose fibre, ivory, perforated rubber, metals of various sorts, plaster of Paris, paraffin, the Mosetig-Moorhof bone wax, Beck's paste, etc. The objections to the use of materials which act as temporary or permanent foreign bodies are obvious.

Flaps of fat or muscle have been extensively used but in many cases where the cavity lies in the head of the tibia this method is not useful or difficult to execute satisfactorily.

Surprisingly little work has been done in the use of free fat transplantation for the obliteration of this type of bone cavity. Caforia, in 1918, reported a successful case, reviewed the international literature and could find record of but 45 cases, of which 16 were successful. Kanavel refers to three unsuccessful cases in which the fat transplants oozed out drop by drop and seemed to do no good.

These cases, with the exception of the one reported by Caforia, were done before the establishment of the Carrel-Dakin technique. Considering the poor resistance fatty tissue offers to infection, the percentage of successful cases seems surprisingly high. One must consider, however, that in this instance we are dealing with a living tissue of an

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individual who has developed a considerable resistance to a long standing infection. The introduction of the Carrel-Dakin technique would seem to modify previous results and necessitate repetition of certain phases of this work, for by this means, combined with thorough surgical treatment, we may render the chronic bone cavity relatively sterile.

McArthur, speaking before the Western Surgical Association in 1913, said: "Turning from the general to the particular, let me instance fat, a tissue made up of a delicate living reticulum stored with an enormously disproportionate amount of fatty globules. For existence and maintenance it requires little more than plasma and asepsis under body conditions; hence, it can be transplanted free, and in almost any bulk, provided these conditions be maintained. For this reason, we may now look to see cavities in bones filled not with Moseitig-Moorhof's plug or Beck's paste, but with pads of living fatty tissue taken from the patient, as was recently demonstrated at Garre's clinic in Bonn."

In October, 1921, a patient entered the University Hospital with a chronic osteomyelitis of the upper third of the left tibia, and, following the suggestion of Dr. A. C. Strachauer and Dr. A. A. Law, it was decided to endeavor to obliterate the cavity with a free transplant of fat in preference to using a foreign substance or attempting a blood clot operation. Other methods did not seem feasible. The history was as follows:

Hospital No. 8813; female; age 49; admitted May 31, 1916. Occupation, housework. Family history, unimportant. Personal history, attacks of cholecystitis for past 15 years. Smallpox 8 years ago. Rheumatism 2 years ago. Present illness, patient entered the hospital 2 days after an attack of cholecystitis with classical symptoms. In addition to this she had sustained a compound fracture of the left tibia in April, 1915. An operation was performed at that time, some pieces of bone removed and the ends of the fractured bones wired together. The wound healed after discharging for 10 weeks but reopened in February, 1916, and has discharged pus since then. The leg was painful, necessitating the use of crutches. Physical examination, essentially negative except for a cholecystitis and osteomyelitis of the head of the left tibia. The cholecystitis flared up three days after admission to the hospital. Urinalysis normal; Wasser-

mann negative. Operation, June 13, 1916, cholecystectomy. Removal of a stone as large as the end of the thumb. Drainage of gall bladder. Cholecystectomy contra-indicated by subacute inflammation. Curettage of left tibia; removal of wire. Cavity in head of tibia carbolized and packed. Uneventful recovery and discharged. Readmission, October 29, 1916. Left leg oedematous and painful. Discharging sinus present and probe encounters pathological bone. Hemoglobin 90 per cent; w.b.c., 6,200. Operation November 11, 1916. Old sinus tract dissected out, cavity curetted to healthy bone on all sides. Cavity measured 1.5x.75x.75 inches. Filled with Moseitig-Moorhof bone wax. Posterior splint applied.

Admission No. 3, September 25, 1917. Wound has discharged since previous admission. Leg is painful. Sinus as large as index finger at upper end of left tibia. Operation, October 5, 1917.



Fig. 1. X-ray taken Oct. 28, 1921 showing bone cavity and osteomyelitis before curettage of cavity (Nov. 3, 1921) preparatory to fat transplantation (Jan. 4, 1922). Notice proximity of cavity to the knee joint.

Proximal end of tibia chiseled out; cavity extended up into the head of tibia which could not be uncovered.

Admission No. 4, October 26, 1921. Physical examination reveals no new findings. Discharging sinus still present. Urine normal; hemoglobin 70 per cent; r.b.c., 4,300,000; w.b.c., 9,860; Wassermann negative. X-ray shows old osteomyelitis of upper half of left tibia (Fig. 1). Operation, No-



Fig. 2. X-ray taken Feb. 13, 1922—forty days after fat transplantation.

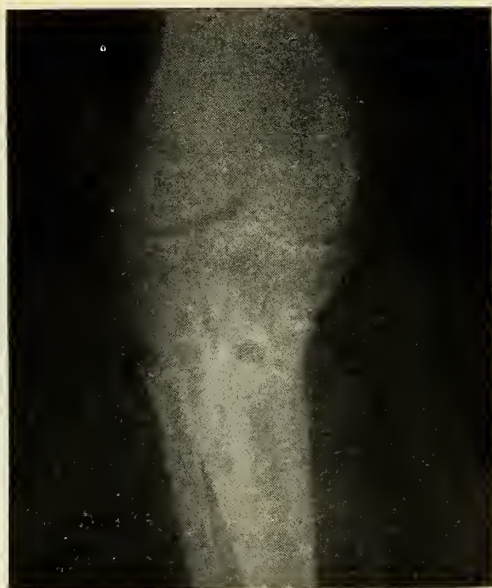


Fig. 3. X-ray taken nine months after fat transplantation showing considerable new bone formation.

November 3, 1921. Previous operation incisions extended upward over an inch. As much of roof removed from cavity as seemed possible without opening the knee joint. Cavity extended close to, but does not involve the joint. Cavity thoroughly cleaned out with chisel and curette. Much foul smelling material and necrotic bone removed.

November 12, 1922, Dakin's solution every two hours with reduction of bacterial count to one organism in two fields.

Operation, January 4, 1922. Piece of fat larger than necessary to fill cavity removed from the abdominal wall by an assistant. Cavity thoroughly curetted after filling with iodine. Skin margins excised and undermined. Cavity again treated with iodine. Field draped with clean towels, gowns and gloves changed. Fat inserted, completely filling the cavity of about the size of a hen's egg. Closure with silkworm without drainage. Relaxation incisions placed well laterally on either side.

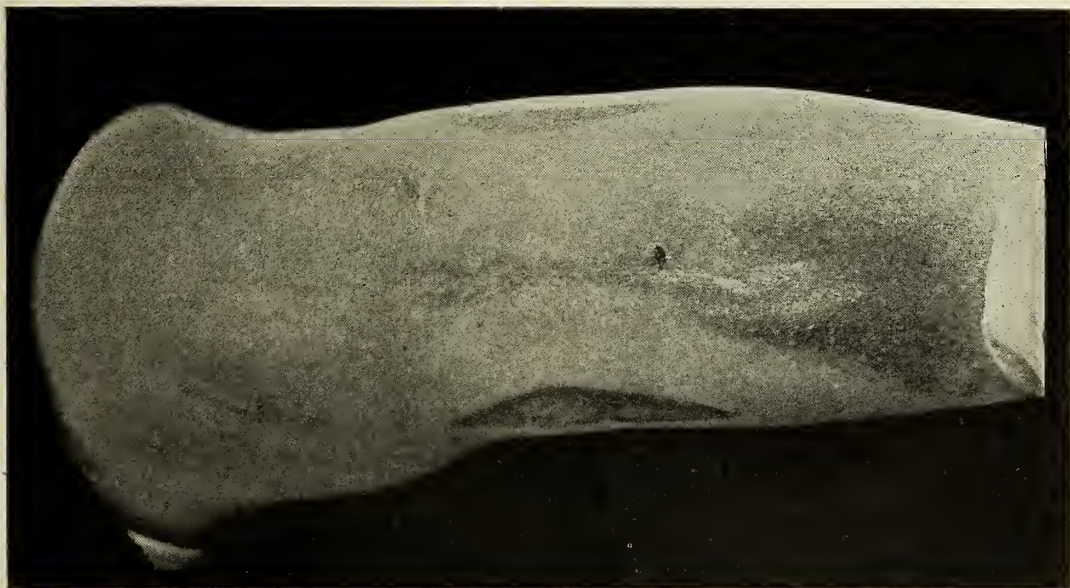


Fig. 4. Photograph of leg nine months after transplantation of free fat showing central scar of operative closure and lateral relaxation incisions.

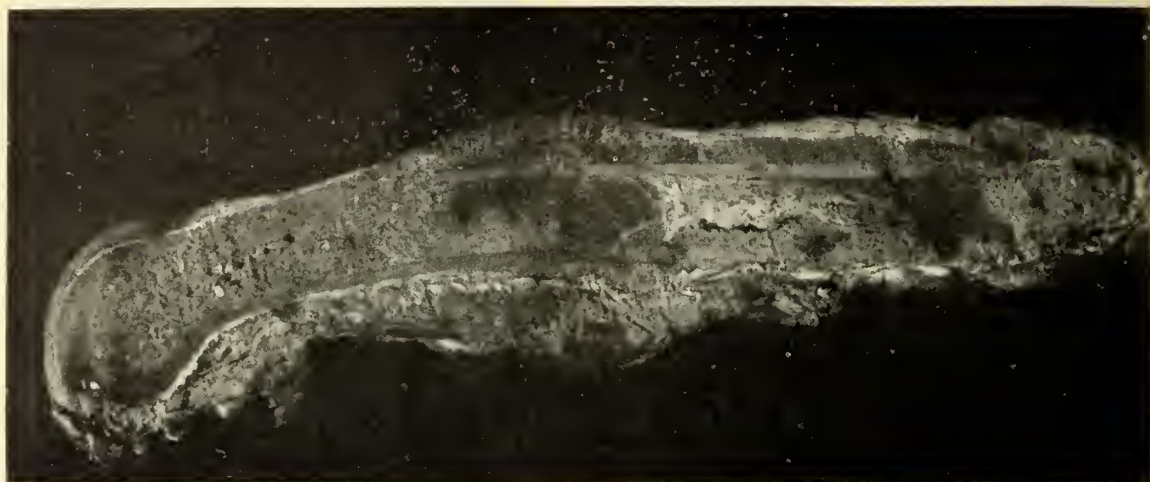


Fig. 5. Fat graft in femur of dog after three and one-half months.

Post-operative, temperature rose to 100 degrees and on the fourth day was normal. Healing per primam. There was no discharge from the wound and no redness or induration was present at any time. There was no evidence of liquefaction of fat or of the presence of fluid in the wound throughout convalescence.

January 20, 1922, skin graft to raw areas where relaxation incisions were made.

On February 13, 1922, x-ray, osteomyelitis involving the upper half of left tibia. There is a small central area of bone necrosis (Fig. 2).

A second case of this type was operated at the University Hospital after reducing the bacterial

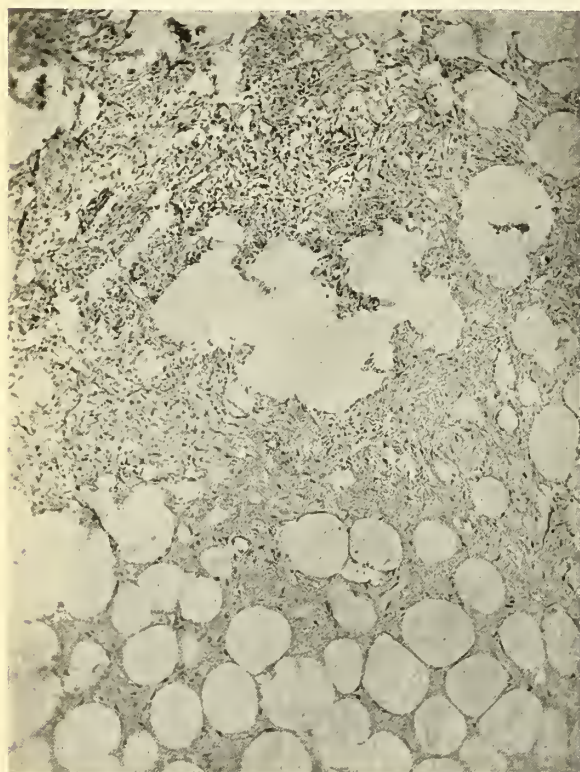


Fig. 6. Photomicrograph of fatty tissue three and one-half months after transplantation into femur of a dog.



Fig. 7. Photomicrograph of another area from graft (Fig. 5).

count to less than one organism to the field. While reflecting the flaps a small isolated pocket of pus was encountered. The technique as before described was followed, but infection developed and graft slowly disappeared. No part, as far as could be determined, remained viable.

Transplantation of fat has been made in eight dogs for the purpose of studying the ultimate fate of the graft. Our results are confusing and the evidence insufficient to lead to any definite opinion. There seems to be some confusion in the literature also. Our observations lead us to believe that in dogs, in certain instances the fat graft remains in situ for a considerable period of time. The specimen exhibited shows such a graft after three and a half months (Figs. 5 and 6). We, however, used fairly large grafts. Caforia finds that the fat graft does not remain in situ as such and that it is totally substituted by new osteoid tissue in rabbits, after twenty-three days, in some instances. Small grafts were used.

The clinical and experimental work which has been done on this subject does not warrant any definite conclusion. Preceded by thorough surgical treatment and relative sterilization with Dakin's solution, the transplantation of fat may be a procedure of practical value in the obliteration of bone cavities in chronic osteomyelitis. In the case reported, the result has been very satisfactory. The wound has now been healed for nine months.

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DISCUSSION

Dr. Bulkley called attention to a paper written by Dr. Walton Martin read before the New York Surgical Society in 1919. Dr. Martin on that occasion presented a series of animal experiments in the closure of bone cavities by trans-

planted fat and also presented in person three patients into whose osteomyelitic cavities, after thorough Dakinization, he had transplanted fat. In each of these cases the transplant had healed per primam and the fat had not been extruded. Dr. Martin laid particular stress upon the fact that these bone cavities should be practically bacteria free at the time of implantation, a few staphylococci per field only being admissible. All of the cases presented by Dr. Martin still showed on x-ray examination a lack of new bone formation in the cavity. This observation tends strongly to confirm the view expressed by Dr. Dunn that in these cases of fat transplantation the fat is not replaced by bone.

Dr. Geo. R. Dunn in closing said that he did not feel that one was entirely justified in drawing a definite conclusion as to the ultimate fate of the transplanted fat. He said it was certain that in some instances at least, the absorption of the fat transplanted in a series of animals was much slower than other observers have reported. In the specimen exhibited there was no appreciable absorption, replacement, or diminution in the size of the fat transplanted, after remaining in the femur of a dog for three months. On the other hand, in the clinical case which he was following, x-ray examination showed a considerable amount of new bone formation. From a point of view of treatment it would seem highly desirable that the fat should be replaced by new bone. Whether or not this occurs ultimately he said they were unable to state. Certain it is that the fat maintains its identity for a very considerable period of time.

TREATMENT OF FRESH FRACTURES OF THE SHAFT OF THE FEMUR*

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It is almost impossible in civil practice to standardize the treatment of fractures of the shaft of the femur. In my opinion the Thomas splint comes the nearest to a standard treatment. Unquestionably the straight or flexed and elevated positions which may be obtained by the combined use of the Thomas splint and the Balkan frame are giving the best results in fractures of the upper third. In fractures below the upper third the ambulatory splint which is a modification of the Thomas splint is in my opinion the ideal treatment.

There is at the present time a controversy between surgeons of large fracture experiences as to whether fractures of the shaft of the femur should be treated by operative or non-operative procedures.

*Read in Symposium on Fractures, St. Paul Clinic Week, January, 1923.

In my opinion fractures of the shaft should be treated by non-operative methods whenever possible and that if we perfect ourselves in the use of the different traction methods, the operative treatment will seldom be required.

In simple and comminuted fractures of the femur between the trochanter and condyles in which the skin is intact and there is no interposing soft tissue, it is usually possible to approximate the fractured ends by surface traction. This should be the treatment of choice when it can be accomplished. Nature contracts muscles for the purpose of using them as splints. This contraction may be called pathological contraction or spasm. If sufficient traction is applied, this muscle spasm is overcome, when the bones usually fall into position and remain there so long as sufficient traction is continued. We must use as many pounds of traction as necessary to overcome the muscle spasm no matter whether it be 10 or 50 pounds.

In surface traction the adhesive should be applied well above the point of fracture, as high up on the groin and hip as possible, even if the fracture is in the lower part of the femur. In a fracture the lower end will be carried down by traction, the upper end being fixed. That the soft parts can be stretched and carried down below the proximal end of the fractured bone has been demonstrated in cases of amputation of the thigh in which the bone has been cut too long so the amputated end of the femur is exposed as much as two or three inches. In these cases, surface traction will pull the soft tissues down so they will unite over the end of the protruding amputated femur, demonstrating that surface traction can elongate the soft tissues.

Counter extension can be best secured by the pressure of the ring of a Thomas splint against the spine of the ischium. This pressure against the spine of the ischium can only be attained by raising the ring of the Thomas splint up against the ischium by overhead pulleys and counter weights of about 7 to 10 pounds. If the ring of the Thomas splint is not pulled up against the ischium by counter weights, it will rest on the perineum which can only stand about five pounds of pressure. Besides, this holds the ring up away from the anus so the rectal function is not interfered with and the ring is pulled snugly against the ischium when the patient moves or rises in bed.

Ether should be given when applying traction for reduction so as to secure good initial reduction. In reducing a fracture, overcorrect and rub the ends of the bones together so as to flare out the periosteum and open the blood vessels which will favor early callus formation. If good crepitus is obtained, one will know there is no muscle or soft tissue between the fractured ends.

Care must be exercised in applying the adhesive. Shave, wash the fat off the limb with soap and water, then apply the lateral strips in triplicate. Apply circular bands of adhesive above ankle, below knee, well above knee, and high up on thigh. Pad the malleoli. Apply a gauze bandage over the adhesive and over the gauze bandage apply some adhesive strips to keep the bandage from rolling or loosening.

Surgeons with very large experience, who have used as high as 50 pounds of weight, have never seen any damage done to the knee-joint by properly applied surface traction. The application of adhesive high up on the thigh even when the fracture is in the lower third, relieves the knee of much strain. For slinging the leg in the Thomas splint, cotton flannel is the best. For firmer support, cut aluminum sheets in strips three or four inches wide and long enough to permit moulding to the shape of the leg and bending over the sides of the Thomas splint. These splints will not interfere with the taking of x-ray pictures.

The patients with fracture of the femur should be hospitalized so they can be inspected daily to see that proper extension and alignment is maintained. As the femur has a great tendency to bow backward, this must be overcome by preying the femur upward with a stick and pushing more padding under it every day or two when needed. Roentgen-ray pictures should be taken frequently to check the reduction and alignment.

Traction should be maintained for about four weeks in children and from four to six weeks in adults, or until there is no false motion. Then put up in a plaster cast for a month, after which put on a caliper walking splint, which should be worn until union is strong and there is no tenderness in the callus; this will usually be about six months from the time of injury. Many cases of shortening occur because the patient is allowed to bear weight on the leg before the callus is firm.

In fractures of the upper third there is usually marked displacement. The glutei and external rotators draw the upper fragment upward and rotate it outward; the iliopsoas muscle pulls it anteriorly to a position of flexion. The lower fragment is carried inward and upward by the abductors and hamstrings. Because extension acts on the lower fragment and but slightly modifies the direction of the upper fragment, it is necessary to bring the lower mobile fragment into line with the upper fragment. To accomplish this the thigh must be flexed on the body and abducted, which is easily done by shifting the pulleys on the Balkan frame.

Traction has become the important thing in fractures of the femur and may be attained by tying the traction bands over the end of the splint, tightening by twisting the bands, or by weights and pulleys or fixed screw traction. Each method of securing traction demands daily attention.

In order to prevent necrosis of the skin where the ring makes counter pressure against the tuber ischii, the ring should be made to fit snugly. The skin should be pulled back and forth under the ring so the pressure does not always come on the same place. Bathing with alcohol and keeping dry with talcum aids in preventing formation of pressure sores.

When an anesthetic is given, the muscles should be overstretched so as to partly paralyze them, after which not nearly so much traction will be required to maintain the desired length. If an anesthetic is not given, maximum traction should be used at the beginning when the ligaments are firm as there is then less danger of producing relaxed joints than if gradually increasing traction is applied after the ligaments are softened. Maximum traction at the beginning decreases the pain and gives better alignment before the blood clot at the site of fracture becomes organized.

In selecting a Thomas splint, add 1.5 inches to the circumference of the thigh at the crotch. The splint should extend from the tuber ischii to eight inches or more below the heel. For making walking calipers, cut the Thomas splint off and bend the bars in so as to give one-half inch clearance under the heel.

After the application of body casts following fracture-table reduction, the spastic thigh muscles tend to cause a renewal of the displacement no

matter how perfect it may have been as shown by x-ray at the time of reduction. The position of a shaft fracture, as shown by x-ray shortly after reduction and which may seem satisfactory, very frequently shows the original displacement when examined by the Roentgen-ray a few days later. When the fractured ends of a transverse fracture interlock by their serrated edges, a bowing is liable to develop later from muscle-pull within a heavy cast. Oblique and spiral fractures simply tend to slip back into the old displacement. It is practically impossible to maintain any real extension in the longitudinal axis of the leg by means of a plaster-of-Paris body cast. Therefore casts should only be used after the fractured ends have been fastened by some operative procedure. Even then it is best to raise the foot of the bed and attach a counter weight to the cast above the ankle.

It is not maintained that continuous traction results in a perfect anatomic reduction in all cases, but it assures the restoration of the weight-bearing axis of the leg, an insignificant shortening if any, and a result approaching the normal.

In elderly people and in rheumatic patients because of the danger of stiffness, a knee flexion splint should be employed. This consists of the lower half of the Thomas splint attached to the sides of the main splint by a hinged attachment which permits of free extension and flexion at the knee.

The foot should be maintained at right angles to the limb. This position can be obtained by gluing the lower half of the sock to the plantar surface of the foot, or by means of a broad adhesive strip similarly applied. From this suspension a rope is run to overhead pulleys, to which is attached a weight of two to three pounds.

In compound fractures fill the wound with tincture of iodine, official strength. Debride, being sure to cut away all dead and bruised tissues. Fill the wound with iodine again. If the injury has been sustained within forty-eight hours, close with interrupted sutures. If more than forty-eight hours have elapsed from time of injury to time of debridement, drain. Always give tetanus antitoxin. In compound fractures when much skin has been destroyed, and there is drainage, a caliper tong or Steinman nail will have to be used for traction in conjunction with a Thomas splint.

In simple or comminuted fractures, when soft

tissues are interposed between the ends of the fractured bone, and in the very rare cases in which reduction cannot be secured by traction, open operation, with some form of fixation, is indicated. Open operations should be undertaken only by surgeons of experience and the most rigid technic followed. Fixation may be made by one of several methods. Choice of method should be in the following order:

1. Kangaroo tendon,
2. Bovine bone screws and plates,
3. Inlay bone graft,
4. Metal screws extending through skin and dressings,
5. Intermedullary autogenous bone splint,
6. Lane plates,
7. Parham bands,
8. Silver wire.

Always avoid non-absorbable fixation materials buried in the wound.

Kangaroo tendon is the ideal fixation material in oblique or spiral fractures, being threaded through drilled holes in the approximated bones. It can be obtained in extra heavy sizes known as X1-2-3-4. It is stronger than silver wire which is apt to break where it is twisted. It is absorbable but not too rapidly so. The knot can be made secure by tying the last half knot of the tendon with chrome catgut.

Bovine bone screws and plates are easily and quickly applied with the aid of the special tools made for their application. They are better tolerated by the bone than metal, in addition to which they are slowly absorbed so the bone is in time relieved of the foreign body. The autogenous inlay bone graft is preferable to any other form of fixation as it stimulates osteogenesis. The objection to its use in fresh fractures is that its accomplishment requires more time and manipulation. The autogenous bone graft is indispensable in old ununited fractures but in fresh fractures the extra operative procedure can and should be dispensed with.

The screw method in which a fracture is screwed together with long screws protruding through the skin through small separate skin incisions, is worthy of consideration. The screws are protected by dressings and can be removed without disturbing

the external fixation and extension apparatus after the fractured ends have become agglutinated.

Metal plates, when used, should be removed in children in about six weeks and in adults in about eight weeks, as by that time they will have served their purpose and if left longer they will quite likely cause irritation and late infection.

Any method of fixation should only be used to steady the fragments. External fixation and traction must be depended upon to support the parts until union takes place. No internal fixational agent, however strong, will withstand the constant strain of muscle spasm.

In all cases of bone fixation by any method, the operation should be performed on a fracture table so the extension can be maintained until external fixation and traction has been applied.

It has been my experience that a straight Thomas splint with adhesive traction to the skin and elevation and abduction of the distal end of the splint to secure alignment and approximation in the upper third has been satisfactory. As there is a long interval between the time of union and weight bearing, the muscles and knee can be put in good condition by massage and motion during this interval.

Probably the majority of surgeons are of the opinion that fractures of the shaft of the femur should be placed in a Thomas splint which has the lower portion of another Thomas splint bolted to its sides. This will permit the placing of the limb on a double inclined plane which will give the best neutral muscle position, as well as permit of early flexion and extension of the leg. It is maintained that this early motion at the knee will hurry union, stimulate the circulation, prevent muscular atrophy and stiffness of the knee. This necessitates the use of skeletal traction secured by the use of a caliper tong or a Steinman nail through the condyles of the femur. With the use of the Steinman nail, there is often a reaction with a temperature up to 102 degrees, and a pulse rate up to 100 degrees; in addition osteomyelitis sometimes develops which may require several months to heal. A good caliper tong with adjustable pins which can be locked so they will not penetrate too deeply into the bone or slip and tear into the knee joint should be given preference over the Steinman nail. In applying the caliper tongs, pull the skin up toward the body before incising it so it will be free from tension

after the muscle contraction has been overcome. This will eliminate pain and pressure necrosis in the skin. The pins should be forced about .25 inch into the cortex.

The caliper tongs are especially indicated in fractures of the lower third because the lower fragment is pulled backward by the gastrocnemius. By changing the pulleys carrying the counterweight attached to the tongs, the upper end of the lower fragment can be brought up into accurate opposition with the lower end of the upper fragment. The tongs are not painful and will not cause inflammation if properly and aseptically applied and covered with sterile gauze.

After the limb has been fixed correctly in its elevated balanced position, by weights and counterweights, the patient can move about in bed without changing the position or alignment of the fractured bone.

Added traction can be secured by fastening to the end of the Thomas splint a counterweight and elevating the foot so the body will make counter extensions thereby relieving some of the pressure on the skin over the ischium.

Of equal importance with preservation of proper length is the preservation of the weight-bearing axis of the leg, that is, the avoidance of inversion or eversion of the foot which would destroy the weight-bearing line, from the anterior superior iliac spine through the patellar center to a point between the great and second toes.

In children, because of soiling of dressings and apparatus by urine and feces and because of difficulty of maintaining immobilization, Bryant's vertical extensions or traction is the treatment of choice. Long adhesive strips are applied to the sides of the legs and thighs, fixed by small spiral strips over which a roller bandage is applied. The adhesive strips are brought beyond the feet and joined over a spreader through which vertical traction is made with rope pulley and weight from an overhead support. Counter extension is made by the weight of the child's body. If one leg alone is suspended the child is inclined to twist about at all angles or support himself by raising the body weight with the well leg flexed at the knee, hence both legs should be suspended with enough traction to slightly elevate the buttocks from the bed. After five weeks of suspension, the extremities are

lowered. No weight-bearing should be permitted for from three to six months, during which time the child may use a walking caliper splint thereby transferring the weight to the ischium. Extension and fixation by means of a Thomas splint should be the method of second choice in the treatment of fractures of the femur in children.

In obstetrical fractures and in infants, folding the thigh against the abdomen so the foot is in the supra-clavicular space and securing it there by a broad bandage, gives excellent results. The limb should be loosened daily, washed and powdered while being securely held. A soft towel should be placed between the body and leg to prevent chafing. In children up to two inches of shortening will be compensated so both limbs will become equally long.

FRACTURES ABOUT THE HIP JOINT*

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St. Paul

It has been said that the best way to be sure of a satisfactory result in hip fractures is to have a system and a conviction that makes it unnecessary to look up results.

Perhaps each individual has some system that is best for him to follow, and certainly this is true when one reviews the literature of hip fractures and finds leaders in surgery proclaiming some one system as the best, although they vary only slightly in technique and principle.

Fractures about the hip are often difficult to care for, and that many injuries are poorly cared for is demonstrated by the many deformities and non-union of bone seen after injuries in this area.

The causes of these many admittedly poor results may be stated as follows:

1. The true diagnosis has not been made, and if made only meager treatment instituted.
2. The time element is not sufficiently considered.
3. Complications demand frequent change of position in the patient.

*Read in Symposium on Fractures, St. Paul Clinic Week, January, 1923.



Fig. 1. Fractures about head of femur that may be treated by abduction method. (1) Epiphyseal separation. (2) Intracapsular. (3) Intracapsular. (4) Inter-trochanteric. (5) Sub-trochanteric.

4. Poor results obtain even with good treatment because of poor physical condition of the patient.
5. There may be no real treatment instituted.
6. Synovia or tissue may be present between the fragments of bone.

It is not possible in so short a time to more than mention various methods of treatment of fractures about the hip joint, such as the Maxwell-Ruth extension, James E. Moore flexion and abduction method, Thomas or Hodgen splints, operative procedures with bone inserts, pegs, plates, bands, or screws.

I would like to review for you briefly the treatment that I personally use most successfully in fractures about the hip joint, namely the Whitman abduction method. This method of treatment was originally designed by Whitman for the treatment of the so-called intracapsular fracture, but I have found that it can be applied to other fractures about

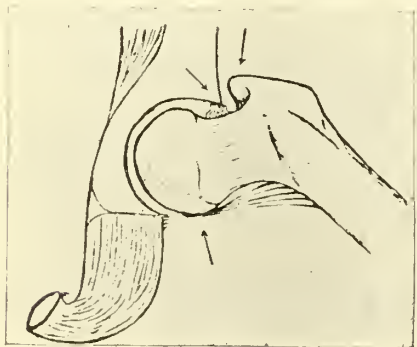


Fig. 2. Principle of abduction, from Whitman. Trochanter major striking ilium, traction on capsule.

the joint successfully, and because of its value in the treatment of these injuries I feel that the method warrants description and a more universal usage. The principle of the method consists in the use of the anatomical structures about the hip joint; that is, when the hip is completely abducted the trochanter major rests against the ilium, the capsule of the hip joint is tense, the glutei muscles are relaxed and the ilio-psoas are in normal tonus. The hip is fixed when the leg is completely abducted and the fragments fall, in the intracapsular case, into very close apposition. In my experience the last few degrees of abduction usually overcomes the deformity, and in intracapsular fractures complete abduction is absolutely necessary to secure apposition of the fragments. As stated before, Whitman's abduction method can be used successfully in other than intracapsular fractures about the hip joint.

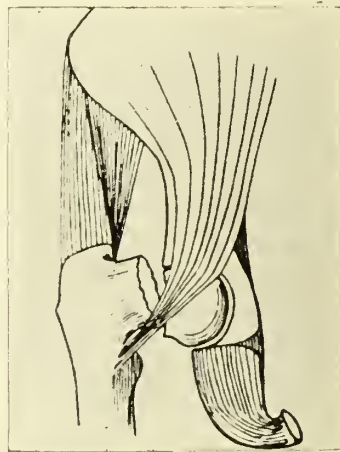


Fig. 3. Intracapsular fracture.

In fractures below the trochanter the method can be used if the fracture is not complete or if sufficient periosteum remains to apply the principle of abduction along with traction.*

Injuries about the hip joint demand most careful examination, both physical and radiographic. After diagnosis is complete some method of treatment must be instituted.

The modern orthopedic operating tables of McKenna, Albee and Hawley render the application of the plaster a relatively easy procedure, and indeed a very fair plaster may be applied with untrained

*Biograph: Whitman's Orthopedic Surgery.

help in a farmer's kitchen without any special apparatus except a good plaster bandage and an anesthetic of short duration.

The mode of operation in the abduction method consists of placing the patient on one of the various orthopedic tables or other support so that it is possible to apply a long spica cast and at the same time make strong abduction and traction upon the thigh with the patient relaxed under anesthesia. The normal hip is abducted to its fullest extent, then the injured leg is abducted to the same angle; rotation of the thigh if abnormal is corrected and rotated internally a few degrees. If one supposes that tissue may have fallen between the fragments, effort is made to remove it by flexing and rotating thigh; then again the leg is completely abducted, slight internal rotation maintained, and if necessary, pressure is made under the trochanter lifting it up into a normal plane with the hip on the opposite side. Padding is applied and a plaster of Paris cast from the nipple line to the toes on the side affected; or a short cast extending only to the umbilicus may be used if the opposite thigh is encased in the plaster in abduction. The plaster remains on the patient on an average of two months, depending upon the kind of fracture and the resistance of the patient; then it is removed and a short plaster spica from knee to umbilicus is applied; active, passive motion and massage are begun at this time, but no weight bearing is allowed until

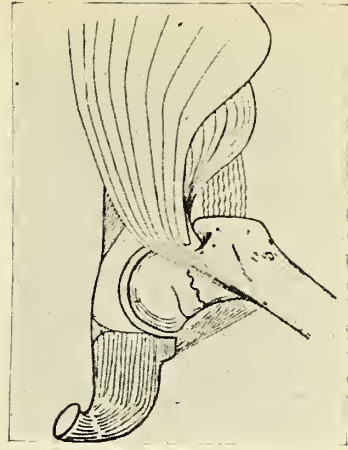


Fig. 4. Abduction applied showing correction of deformity.

three to six months from time of injury, depending upon the type of fracture.

The method is most satisfactory in that if complete abduction is maintained, the fractured ends of bones are locked in position. The patient can be moved daily without fear of displacing the fragments. In old people the head of the bed is elevated and the patient is put up on a slanting wheel chair daily. The apparatus is not likely to get out of order, and the average patient wears the plaster without much discomfort.

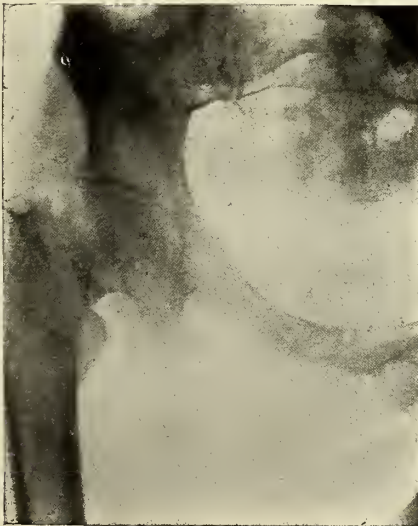


Fig. 5. Typical intracapsular fracture before abduction method.

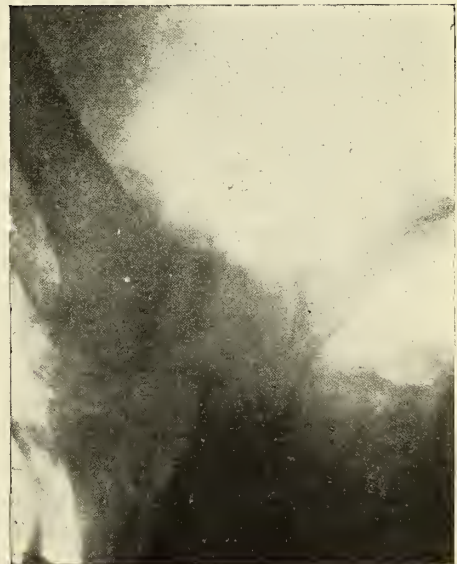


Fig. 6. X-ray through plaster Paris spica applied with leg in abduction showing correction of deformity.

FRACTURES OF THE FOREARM*

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It would be impossible to take up here all the various types of fractures of the forearm and consequently it has seemed best to limit this discussion to fractures of the shafts of the ulna and radius, either alone or in combination, and to fractures of the head and neck of the radius. The other common fractures are those of the olecranon and coronoid processes of the upper end of the ulna, and the so-called Colles' fracture of the lower end of the radius in all its varieties, including involvement of the styloid process of the ulna. These fractures are only mentioned to be dismissed as the limited time would not allow even the most important points regarding them to be discussed.

There are certain general principles to be followed in the treatment of all fractures and these apply to forearm lesions as well as elsewhere. It is, of course, an axiom that, all else being equal, the nearer the approach to normal anatomical contour that can be obtained following a fracture the better will be the ultimate result, but striving for perfect apposition of fragments must not crowd from the surgeon's mind the necessity for that even more important factor than anatomical perfection, good function. Only too often does one see results which show that the surgeon thought only of the anatomical side of the question and forgot that the patient had to use the part again. Good function is often present where the anatomical condition is bad and in children it is very surprising at times to see how nature, acting under the law enunciated by Wolff, will change bad deformities into practically normal bones as time goes on. This same law holds good in adults but its workings here are slow, so that the marked results seen in children never appear. I believe it should also be accepted as a definite principle in the treatment of fractures that conservative measures should always be used as a matter of routine and that operative replacement of bony fragments should only be undertaken when all other methods have failed. There are, of course,

certain indications for operative interference and, for fractures of the forearm, these will be discussed as they arise.

All fractures treated by conservative means must be held by some external appliance and if the principles underlying their use are understood and the dangers realized, the actual type of apparatus need not of necessity be stereotyped. There can be little doubt that circular plaster of Paris dressings should rarely if ever be used in the primary treatment of forearm fractures on account of the impossibility of properly observing the progress of the case and of the danger of ischemic paralysis. After the acuteness has subsided such a dressing may be used, however, with little or no danger if properly applied. Plaster of Paris splints are very satisfactory and have the advantage of allowing perfect moulding to the parts. The so-called "sugar tong" splint is of this class and gives excellent fixation in addition to allowing daily observation of the parts. This splint is a single long plaster strip which runs from the palm of the hand up to the flexor surface of the forearm, around the back of the elbow and down to the dorsum of the hand. The hand is held in semi-pronation, that is with the thumb pointing upwards, and the elbow at a right angle. Well padded wooden splints are commonly used and can be recommended but it must be remembered that the elbow must also be splinted, usually at a right angle. The best splints are probably the metal gutter splints of Robert Jones in combination with a right-angular elbow splint of the same material. These can be very easily applied and on account of their shape and rigidity prevent undue compression if ordinary care is used in their application. The use of traction by means of glue or adhesive plaster and a weight and pulley, or with a fixed extension by means of a Jones or similar splint, is used at times to overcome overlapping of fragments but this treatment seems to find its usefulness mainly in compound fractures where the wounds have to be dressed frequently without disturbing the fragments. Direct skeletal traction by means of Steinman pins or similar appliance has been used, but certainly the indications for its use must be very rare.

Open operations for the replacement and fixation of fragments can, where indicated, be performed in various ways, but too much stress cannot be laid on the inadvisability of using non-absorbable

*Read in Symposium on Fractures, St. Paul Clinic Week, January, 1923.

material for such work. Frequently kangaroo tendon or heavy chromicized cat-gut, if properly placed through holes drilled in the fragments, will give all the fixation required. Where this does not suffice small intramedullary bone pegs will always hold although rarely an inlay bone graft may be necessary on account of comminution or other complication. Small beef-bone plates have been used with success by the author but one had to be taken out later on account of its becoming loose after the fracture had healed.

The after-treatment with either the conservative or operative treatment is practically the same. The splints must be adjusted as necessary and every case should be examined daily for the first four or five days at least to make sure that the circulation is all right and the fragments staying in position. The greatest danger is ischemic paralysis, that is, the development of muscular fibrosis and its resulting contractions and loss of function due, so far as we know, to the shutting off of the blood supply of the muscles by too tight a bandage or splint or by the interference with the circulation by the swelling, particularly at the bend of the elbow. This condition can develop over-night so its possibility must be thought of when applying the primary dressing.

The time for which the splints must be left on varies slightly with the different fractures, but as a general rule they should be removed at the end of three weeks for massage and other physiotherapeutic measures and only a single palmar splint worn for the next ten days or two weeks, the massage being repeated daily. Of course, active motion of the fingers must be insisted on from the first.

Fractures of the head and neck of the radius are not uncommon but due to their being unrecognized or improperly treated frequently lead to impairment of motion in the elbow joint and in the superior radio-ulnar articulation. These fractures vary greatly in character, ranging from simple cracks through the head to a marked comminution of that part. The button shaped head may be broken into several fragments, one or all of which may become absolutely free in the joint or it may simply be split longitudinally with or without separation of the fragments. The treatment here is of necessity frequently radical for it takes very little deformity of the head of the radius to interfere

greatly with proper supination and pronation of the forearm. With the lesser degrees of fracture the simple immobilization of the elbow in the extreme of flexion will usually give a perfect result but where this position does not force the fragments into their normal location further measures must be undertaken. With transverse fracture through the neck, manipulation can sometimes be made to bring the fragments into alignment and fixation in a right angular splint will hold them there, or if further measures seem necessary a pad pressed over the angulation or the proximal end of the distal fragment may suffice. All fractures of the head and neck, however, which cannot be properly reduced and aligned must be operated upon and the fragments and entire head removed. On account of the anatomy of the part it is almost impossible to replace fragments or hold them replaced, so that removal is the only possibility. As is well-known, resection of the head of the radius can be done without apparently interfering with the function of the joints involved. The main precautions to be observed in these operative cases, aside from the usual surgical ones, is to make sure that the neck of the radius is not pulled out of the annular ligament. Following the conservative treatment, gentle motion should be started in from two to three weeks with massage daily to restore function more quickly to the parts. By the end of four weeks or even sooner if the fragments were impacted, no further protection is necessary. If there is no separation or displacement of fragments, rest until the acuteness following the injury subsides is all that is necessary.

The shaft of the ulna is not infrequently found fractured alone, usually from direct violence such as is incurred by warding off a blow, and presents then in most cases the simplest type of fracture we have to deal with in the forearm. The ulna is subcutaneous for its entire length and if the radius is intact the reposition of ulnar fragments is not difficult as they can be directly palpated. Sometimes it is necessary in cases with a short lower fragment to pull the wrist into the extreme of radial flexion in order to accomplish this reduction. The great complication of apparently simple ulnar fractures is dislocation of the head of the radius and one must be careful not to overlook this condition and give a good prognosis to the patient. Most of these complicated cases will need operative treatment di-

rected at reducing the dislocation and holding it reduced or, this being impossible, the head of the radius must be excised. Open operation for the reduction of ulnar fragments when the shaft has been alone fractured is probably never necessary.

Having reduced the fracture, simple antero-posterior splints of the types already mentioned, with the hand in the semi-pronated position, will suffice for retention. It is not always necessary to run these splints above the elbow if the fracture is low down, but the wrist joint should always be immobilized, the fingers being allowed free action, however. Circular plaster of Paris dressings can be used by one with experience but are to be condemned as a routine procedure for the reasons given above. By the end of two and one-half to three weeks the dorsal splint can be removed and the palmar one strapped on alone for another week. After this time no further support should be necessary but physio-therapeutic measures should be used daily when possible.

Fractures of the shaft of the radius alone, although not seen as often as solitary ulnar fractures, are still far from uncommon. In spite of being well splinted by the unbroken ulna the fragments are not always so easy to reduce as are ulnar fragments for, in addition to being buried in muscle through practically their entire length the pull of the biceps and of the pronator quadratus muscles causes resistant deformities of the fragments. If the fracture is above the attachment of the pronator teres muscle the upper fragment tends to become flexed and supinated due to the pull of the biceps and this can only be met, in the conservative treatment, by fully supinating the forearm and placing the elbow at a right angle, and in that way rotating the lower fragment to meet the proximal one. Any of the splints described will hold the fragments. With a fracture of the radius just above the pronator quadratus the lower fragment is pulled toward the ulna while the upper fragment is rotated externally and pulled away from the ulna. Full supination is again necessary to get the fragments into proper alignment and in addition ulnar flexion of the wrist may be necessary in order to pull the upper end of the lower radial fragment away from the ulna. The retentive dressing is the same as for fractures higher up as just described. These fractures of the radius alone rarely show much overlapping due to the splinting of the in-

tact ulna, but nevertheless it is sometimes only by open operation that reduction can be accomplished. The usual splinting should be maintained and the splints removed early for massage of the part but rotation in pronation and supination must be guarded against longer and five weeks is a safe time to set before allowing this motion.

Fractures of both bones of the forearm present a much more difficult problem than where only one bone is broken for here we lose the splinting action of an unbroken bone and marked overriding and angulation of fragments can easily take place. The simplest type in this class is the transverse fracture of both bones without displacement and with little or no angulation. Here, of course, simple fixation as above outlined is all that is necessary, the elbow being at a right angle and the forearm in semi-pronation. The other types of double fracture need more elaborate preliminary treatment. The attempt at reduction should be made with the forearm flexed to a right angle and with an assistant making counter-traction by holding the arm at and above the elbow. The surgeon then makes traction on the forearm with one hand and manipulates the fragments with the other, bringing the part into supination during this maneuver. This procedure brings the fragments into better alignment and allows more satisfactory handling of them. End to end reposition must be obtained but by that is not meant perfect apposition. The fragments can be in contact for as little as one-third of their diameter and still a perfect functional result can be obtained. The great danger is cross union or interference with some portion of the rotary motion of the radius by the too close approximation of fragments of the two bones to each other. The semi-pronated position, in addition to holding the radius and ulna further from each other than the position of extreme supination, is the most comfortable for the patient and is the position of choice unless contra-indicated as previously mentioned. Where it is impossible to obtain a manipulative reduction, and one should not give up after the first attempt, open operation is indicated and is recommended as better than the attempts at slower reduction by means of the weight and pulley or fixed traction. If the fragments after reduction can be held with absorbable sutures they should be used and the more complicated and time consuming methods used only when the simpler methods

are insufficient. Not uncommonly it will be found that only one bone will need the operative fixation, the other remaining in place with only the external splints to hold it. Any of the methods described may be used for the fixation of the fractures whether reduced by the open or closed methods and the usual observing after-treatment is the same for both. From the third week on careful massage should be performed daily, but not until the end of the fifth week should the arm go unsplinted. There is always danger of late bowing or angulation developing if the forearm is used before the callus has had time to harden.

In conclusion, the points to be remembered are:

1—Conservative treatment must always be used if possible in the treatment of forearm fractures.

2—Circular plaster of Paris dressings should never be used as a routine procedure in such fractures.

3—The use of splints of the coaptation type with a right angular splint for the elbow is the conservative treatment of choice.

4—Operative treatment must use the simplest fixative method possible to obtain results, the use of metal plates or wire being absolutely contra-indicated.

5—Early massage and physiotherapy will hasten recovery of function and accelerate bony union.

MANAGEMENT OF HEART DISEASE IN CHILDREN*

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Minneapolis.

Although the mortality rate in general in the United States is on a decrease, the mortality rate from heart disease is on an increase. In a census, taken in 1919 by the Metropolitan Life Insurance Co., it was shown that organic heart disease caused the highest number of deaths—about 155,000—in the United States.

From 1910 to 1917 the death rate from heart disease increased from 9 to 35 per 100,000. Studies conducted by the Metropolitan and New York Life

Insurance Companies revealed the fact that heart disease reduces longevity by one-half, and that 60 to 70 per cent of all cases of mitral regurgitation suffer their primary attack during childhood. Two to two and one-half millions of people suffer from continuous disability on account of this disease.

The seriousness of cardiac disease amongst children is underestimated. One to one and one-half per cent of all school children are handicapped by permanently damaged hearts, according to an investigation of the schools of New York City. A similar investigation would, in all probability, reveal about 700 heart cases amongst the Minneapolis children of school age. Amongst the 20 million school children of this country between five and thirteen years of age, there must be about 200,000 who should be treated for heart disease. The signs and symptoms, the clinical progress, the prognosis and the treatment of valvular disease in children are so different from those in the adult, that it is impossible for the student to have an intelligent understanding of the subject in the child, from a study of the same disease in the adult. In the adult, the student finds usually the signs of cardiac failure; in the child failures are rare before the age of fourteen. In the adult the physical signs are complicated, involving many organs; in the child the signs are few if any, and are usually referable to the heart alone. In the adult the prognosis is poor, while in the child the prognosis is usually good. The normal heart of the child presents many anatomical and physiological peculiarities. The heart lies higher than in the adult; the apex beat is outside of the nipple line immediately after birth, assuming the adult relationship at about seven years. During the first year the heart hypertrophies normally to three times its original weight and volume. The heart sounds differ from those of the adult in intensity as well as in relation to each other, which fact is of clinical importance in certain heart affections. At birth and for about a week after, they are tic-tac and galloping in character, with no difference in tone between the first and second sounds. At about the end of the second year the first sound becomes booming and louder than the second sound, this relationship persisting throughout childhood. The sounds are louder in the standing posture than in the lying. Impurities, roughness and splitting of the sounds, especially of the first, may occur in perfectly healthy children.

*Read before the Minnesota State Medical Association, Minneapolis, October, 1922.

Whereas alcoholism, syphilis and other degenerative processes are etiologic factors of heart disease in the adult, rheumatism, tonsillitis and chorea cause 90 per cent of acquired heart disease in the child.

The reserve of the heart is relatively greater in childhood than in later life due to the absence of a vicious circle of accumulated abuses. For this reason the prognosis in pneumonia, for example, is more favorable in the child than in the adult. Because of the imperfect inhibitory mechanism controlling the heart, non-pathologic arrhythmias are of more frequent occurrence in childhood than in later life. About 90 per cent of all heart affections in children involve the mitral valve, aortic and tricuspid lesions being practically always secondary to the mitral lesion.

Heart disease is first suspected when a murmur is heard. A heart murmur is heard quite commonly at birth and for a few weeks following. It is practically always associated with a patent foramen ovale or a small patent interventricular septum.

These murmurs usually disappear within the first few months. The majority of murmurs heard during the period of infancy are congenital in nature. They are usually quite loud, musical or harsh. They may be heard all over the chest and back and even over the abdomen with the maximum intensity usually to the left of the sternum over the second and third intercostal spaces.

Acquired murmurs due to organic heart disease occur rarely in infancy. They are, as in the adult, produced by inflammation of the endocardium, usually as the result of acute infections, especially tonsillitis and rheumatism. They are often best heard at the apex and transmitted most frequently towards the axilla and the back. They are sometimes musical, rarely harsh in tone, and not as loud as those of the congenital type. In acquired heart disease the systolic murmur is by far the most common. The diastolic murmur, however rare in children, is always pathological and is usually a part of a double murmur.

In children of school age non-pathological murmurs are quite frequent and too often diagnosed chronic endocarditis. No matter how loud they are they are never associated with a diminished exercise tolerance. Non-pathological murmurs may be classified as follows:

1. The cardio-pulmonary murmurs are systolic murmurs, heard best at the left of the sternum, at about the second and third interspaces. They frequently disappear or diminish in intensity upon holding the breath.

2. The atonic murmur is usually heard at the height of an acute infection, disappearing upon recovery. This murmur is systolic, may be heard best at the apex, and is often transmitted into the axilla.

3. Compression murmurs depend upon the pressure of the stethoscope upon the chest. They are frequently heard in rickets.

4. So-called accidental murmurs because of the absence of any signs of heart disease (the x-ray and electrocardiogram being normal) are systolic in time, soft, superficial, usually losing their intensity before the end of the first sound. They can most frequently be heard at the pulmonic area. They are well localized, transmission into the axilla being rare. The belief that these murmurs are heard best in the lying posture and disappear in the erect cannot be confirmed by the author.

The venous murmur or venous hum occurs very frequently in normal children especially during the school age. It can be heard throughout the entire heart cycle, over the internal jugulars, sometimes loud and harsh, at other times low and soft. It is loudest at the inner third of the clavicle. The murmur almost always diminishes in the prone position and is usually accentuated by even moderate pressure with the stethoscope.

Arterial murmurs are always pathological in children. They are heard best at the angle of the jaw or over the inner edge of the sternocleidomastoid muscle. Arterial murmurs over the vessels of the neck are common in congenital heart disease. A systolic murmur is also frequently heard over open fontanelles, especially in rickets during the first year of life.

In the absence of enlargement of the heart and other signs of organic heart disease, congenital or acquired, a murmur should not be given serious consideration.

The determination of myocardial efficiency is especially important for prognosis and treatment. A careful and detailed history of the subjective signs following exercise is necessary. (A mother's observation of how the child reacts to the usual

activities is, as a rule, quite reliable.) Is the child able to indulge in the simple and necessary exertions without any untoward effects? Does climbing stairs or playing games cause uncomfortable dyspnea? In addition to the history the so-called functional cardiac tests may be of aid. However, not any one of these tests alone determines the cardiac reserve of an individual, because the effect of the central nervous system on the circulatory reactions cannot be measured. These tests are based upon the effect of posture and exercise on the pulse rate and systolic blood pressure. In a paper recently published in the *American Journal of Diseases of Children*, the author found that in normal children the pulse rate was invariably higher on standing than on lying, the ratio of the two pulse rates being 1.15.

(Pulse rate $\frac{\text{standing}}{\text{lying}} = 1.15$.) The average difference between the pulse rate in the standing and lying posture equaled 12. The author also found that the blood pressure in the lying position was invariably higher than that in the standing, the average ratio of $\frac{\text{blood pressure standing}}{\text{blood pressure lying}}$ equaled

1.11. In short the ratio $\frac{\text{blood pressure standing}}{\text{blood pressure lying}}$ about equals the ratio $\frac{\text{pulse standing}}{\text{pulse lying}}$

In short periods of exercise with dumbbells, the blood pressure rose on an average of 15 mm. in smaller children (after 40 swings) and 32 mm. in older children (after 90 swings) returning to normal within three to four minutes. The pulse rate increased on an average of 42 beats and returned to normal within two minutes.

The increase of the pulse after short intervals of exercise on the ergometer, a stationary bicycle, was about 62 beats whether the subject rode 1, 2, 3 or 4 minutes. The reaction time increased with an increase in work, averaging 3 minutes after 1 minute and 6 to 7 minutes after 4 minutes. The blood pressure is in proportion to the amount of work performed, the return to normal varying from 4 to 6 minutes.

Exhaustive exercise on the ergometer caused an increase in the pulse rate from 48 to 116 beats. The pulse rate did not return to normal within ten minutes after cessation of exercise. The aver-

age rise of the blood pressure amounted to 30 mm. for children from six to nine years, and 35 to 41 mm. for the older children. The average reaction time of the blood pressure, obtained on statistical calculation, gave an average of 310 seconds with a probable error of ± 15 and a coefficient of variability of 7.

THE MANAGEMENT OF HEART DISEASE

The following classification based upon the functional diagnosis of the heart is in use at the Lymanhurst Clinic for Heart Diseases of Children*: (1) potential heart disease; (2) heart disease of the first degree; (3) heart disease of the second degree; (4) heart disease of the third degree and (5) effort syndrome.

1. *Potential Heart Disease.*—Since rheumatism and its allied diseases, recurrent tonsillitis and chorea, cause 90 per cent of all heart disease in childhood, our hope of decreasing the high incidence and mortality of this disease lies in a preventive campaign against rheumatism. Recurrent attacks of tonsillitis, with or without an increase in temperature, are signs of potential heart disease. So-called "growing pains," in reality rheumatic manifestations, stiffness of the neck and obscure pains in various parts of the body are also suspicious signs. In the absence of symptoms of organic heart disease, all foci of infection should be immediately eradicated and the patient examined every three months to watch the course of the disease.

2. *Heart Disease of First Degree.*—In this group belong children with a mild organic heart lesion, their exercise tolerance, however, being normal. They frequently exhibit rheumatic signs with typical, loud systolic murmurs at the apex transmitted into the axilla. The heart is only rarely enlarged. Early and proper treatment renders the prognosis very good. All foci of infection should be removed as soon as possible, so that the child may resume its school work. Reexamination every three months is important.

3. *Heart Disease of Second Degree.*—In this group of children, in addition to the symptoms mentioned in Group 2, signs of decompensation appear as fatigue on exertion, dyspnea in varying degree and palpitation. These children should be

*The Lymanhurst Clinic for Heart Diseases of Children is conducted by the Minneapolis School Board. It is located on 18th St. and Chicago Ave., Minneapolis.

given a very careful examination not only for the diagnosis of the anatomical lesion but especially should their myocardial efficiency be determined. The patient should remain under observation in the hospital for 48 hours. The temperature by rectum, the pulse and the respiration should be recorded every four hours. The effect of posture and exercise on the blood pressure and pulse should be determined. In the presence of an active infection the foci of infection should be removed, even though definite signs of decompensation should be found. By properly graduating the exercise tolerance of these children, they may be advanced into the group of heart disease of first degree. The prognosis of heart disease of second degree is much more favorable in the child than in the adult.

4. *Heart Disease of Third Degree.*—Children with signs of severe decompensation belong to this group. Their treatment is similar to that of the adult. They must be put to bed at absolute rest, preferably in the hospital. The prognosis in this group is poor. Foci of infection should be eradicated as soon as is thought advisable.

5. *Effort Syndrome.*—A large number of children complain of fatigue upon slightest exertion. Examination reveals no heart murmurs nor enlargement of the heart. Their exercise tolerance, however, is low. These children are analogues of the soldier with effort syndrome. Some are congenital asthenics, some have drop hearts, or long narrow hearts. They almost all have a poorly developed muscular system. They should be treated as cases of heart disease.

Special Points of Treatment.—There are two fundamental principles underlying the treatment of heart disease in children: (1) the early diagnosis of all diseases that are potentially forerunners of heart disease, and (2) the conservation of the heart muscle after an organic involvement of the valves has already developed.

Preventive Measures.—The prevention of acquired heart disease in children depends almost entirely upon the eradication of such foci as diseased tonsils, recurrent multiple abscesses, sinusitis, chronic otitis media and chronic pyelitis. In all potential heart cases a most thorough search should be made for some forms of infection.

St. Laurence* has shown in an investigation of

65 potential cases suffering from so-called rheumatic signs or chorea, or both, that 75 per cent of all the children treated over a period averaging 4.5 years did not develop cardiac lesions.

Rest.—In children we usually err in advising prolonged rest. Only children showing fatigue upon the slightest exertion, dyspnea and other signs of decompensation should be taken out of school and put to bed. The patient should rest in bed in the position most comfortable for him. He should be kept in bed until fever and tachycardia disappear. In school children, a pulse of 100 beats per minute or over in the lying posture may be considered tachycardia.

Exercise and Games.—As soon as a child is allowed to walk, effort should be made to increase the tone of the myocardium through regulated supervised exercise. The ideal exercises are the playing of games in fresh air and the simple arm and foot calisthenics mentioned in detail below.

1. Hands on shoulders. Right arm upward—left arm downward. Hands on shoulders. Left arm upward—right arm downward. (Repeated in rhythm, one count for each movement.)

2. Touch step forward right, arms forward. Touch step sideward right, arms sideward. Touch step backward right, arms upward. (Repeat in rhythm, repeat to left. One count for each movement.)

3. Hands on hips. Knees deep bend. Knees stretch. (Repeat.)

4. Hands on hips and right foot forward. Trunk to right. Trunk forward. Feet change. Trunk to left. Trunk forward. (Repeat.)

5. Arms sideward. Trunk to right—bend. (Repeat to left.) Trunk raise.

6. Arms sideward raise, feet apart, right hand touching floor between feet, left hand upward, trunk forward. Arms sideward, trunk—raise. (Repeat.)

7. Arms sideward and heels raise. Heels sink. (Repeat.)

8. Arms upward—bend. Arms sideward—fling.

The above exercises should be given two to three times a week for 15 to 30 minute periods. Athletic games and gymnasium work as carried on in the schools are harmful to a child with heart disease.

Mental and Physical Hygiene.—It is a mistake

*St. Laurence, William: Jour. Am. Med. Assn., April 1, 1922.

psychologically to tell a child that it is suffering from heart disease. Children should be advised concerning the signs of decompensation in simple language so as to avoid overstrain. Hygienic measures such as rational diet and sufficient sleep are of course important in promoting the child's general health. Since the treatment stretches over a long period of time the child as well as the parent should be admonished to have patience.

Tonsils and Adenoids.—The most important source of infection is the tonsils. In all rheumatic conditions, as well as in heart disease except in the acute stages of endocarditis and articular rheumatism, the tonsils should be removed. Should the symptoms persist after the removal of the tonsils, incomplete tonsillectomy may be the reason. In chorea tonsillectomy often causes a complete disappearance of symptoms or at least a marked improvement. In decompensated cases with increased temperature and tachycardia, the removal of the tonsils is the lesser of the two evils, even though the surgical risk may be great; for by operation there is a hope of changing a fourth degree into a third degree, whereas, a permanent source of reinfection renders the prognosis hopeless. The pediatricist should decide whether an operation should be carried out or not and advise as to the kind of anesthetic. Ether preceded by nitrous oxide is the best anesthetic. The same consideration applies to the adenoids, if present.

Drugs.—Text-books of pediatrics recommend many drugs in the treatment of heart disease which are of no clinical value. Among these are strophanthus, camphor and strychnine. Bromides are of great value indirectly. Children of second and third degree, especially, who are restless, should be given large doses of bromides upon admission to the hospital. Sodium bromide in 10-grain doses two or three times a day to children of school age (given until slight drowsiness results) is of great help. This should be given only for a few days at a time. Morphine is also of value in congenital heart lesions of the stenotic types, especially when accompanied by convulsive attacks and angina. Morphine is also indicated in myocarditis due to diphtheria, especially in the presence of dilatation.

Digitalis should not be administered in heart disease as a tonic. It should be used only in the last stages of the third or fourth degree in attacks of decompensation, especially in auricular fibrillation. It should be given in large doses (according to Eg-

gleston) for a period of twenty-four hours. In a child six years old and weighing 50 pounds, 5 c.c. of the tincture should be given during one day. The first dose (2 c.c.) may be given at midnight and three doses of 1 c.c. at six-hours intervals. If benefit is not seen in 24 hours it should be discontinued.

In view of the alarming increase in the incidence and mortality of heart disease in the United States, a great program of education of parents, social workers, nurses and even of children should be begun. Children should be examined regularly for heart murmurs in public schools. All potential cases of heart disease should be treated early. Our population should be taught, by pamphlet literature and through the press, the early signs of heart disease. Rheumatism, chorea and their effects upon the heart should be explained not only to parents but to children in simple though accurate language.

What has been done against tuberculosis, with splendid results, should and can be done for the control of heart disease.

STANDARDIZATION OF CLINICAL LABORATORIES AND TECHNICIANS*

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With the increasing importance of the rôle the pathologist plays in clinical medicine and the growing appreciation of his laboratory by clinicians, a place of the laboratory assistant commonly known as technician has become fairly well established as a vocation particularly adapted to intelligent young women of proper educational preparation and technical training. Demand for such young women is steadily and rapidly growing among the medical profession who recognize the part the laboratory technician plays not only in the diagnosis and treatment of disease but also purely as a business proposition.

The average physician, however, is not only unappreciative of the merited place she has thus attained in the medical world but also is surprisingly indifferent toward her proper development as a professional of high standing. This evident lack of interest on the part of the medical man is mainly responsible for the various misconceptions enter-

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tained by prospective technicians concerning the nature, possibilities and limitations of this vocation and its training. Little consideration is given to such fundamental conditions of proper training as educational qualifications of the candidate, character and scope of instruction, period of training, etc.

As an inevitable result, a large number of medical laboratories throughout this country are manned by insufficiently trained technicians whose presence alone makes such laboratories institutions of questionable value. The matter is further complicated by the unwelcome intrusion into this field of commercialized laboratories established too often by male technicians of questionable preliminary education and technical training. The seriousness of this complication is not fully comprehended by the average physician, although a casual inquiry will doubtless convince him of the utter lack of standard and of proper supervision in many of these laboratories and of the consequent danger alike to the patient and the physician.

Important as the problem is in the advance of clinical medicine, its consideration has not been widely given by medical men up to the present time, and, as a consequence, references in current medical journals upon this topic are quite limited.

Concerning the training of laboratory technicians, Gradwahl¹ advocates the establishment of schools under proper direction and further suggests the registration of technicians by a board. He considers six months to be sufficient for such training while Grant and Wilson² fix a minimum period of two years. The medical school of Minnesota³ has just inaugurated a course of four years leading to a bachelor's degree.

Concerning the standardization of clinical laboratories, Moore⁴ urges the employment of methods similar to those adopted by the American Medical Association in the standardization of medical colleges, or of hospitals by the American College of Surgeons.

Kolmer⁵ advocates licensure of non-medical directors of laboratories who may then be qualified to interpret findings. The majority of pathologists appear to disapprove of this plan.

The present-day technician may be one of the following three general groups: (1) one who acquires limited training as a helper in a laboratory and who nevertheless ventures out as a qualified technician in search of a more lucrative position; (2) one who receives a certain prescribed course

of training of three or four weeks to six or eight months' duration in a laboratory and is thus known as a qualified technician; (3) one with a college degree who majors in chemistry or bacteriology and sometimes attends in addition classes in clinical pathology and allied medical subjects and is acting as a technician.

These technicians of varied educational qualifications and technical training may be definitely classified according to the scope of their experience and ability. A routine technician is one who is master in general routine methods only, while an advanced technician is one who is qualified to perform more advanced and complicated laboratory procedures such as the Wassermann test, blood chemistry, basal metabolic rate, determinations, advanced bacteriologic and pathologic methods, etc., in addition to routine technic. A specialized technician is one whose practice is limited to one or two branches of the advanced laboratory science.

The minimum educational requirement of a technician is generally set at high school graduation. While college education is desirable in an advanced technician, it is not essential in a routine worker. A nurse who possesses a certain amount of fundamental education and experience in medicine makes an excellent routine technician and occasionally a well balanced advanced technician when properly trained and supervised; while a college woman of proper experience possesses certain educational advantages which qualify her at once to occupy more advanced and specialized positions among laboratory workers.

Concerning sex preferences, such essential qualities as refinement of technic, mastery of detail, perseverance, conscientiousness, thoroughness are natural possessions of women and make them more logically adapted in this field than their more aggressive brothers who are naturally endowed with such fundamental virtues as independence of thought, aptitude for responsibility, positiveness, originality, initiative and business sense, which, when not properly directed, are apt to prove a menace to a commercialized laboratory whose chief aim is financial success. Successful male technicians will, with few exceptions, sooner or later attempt this commercial venture.

In spite of the rapidly increasing demand for good reliable technicians, properly organized schools for systematic training of such technicians

are not found among educational institutions of this country.

Of the nine institutions named by the American Medical Association,⁶ only one school is found to be actually offering such a course of training to prospective candidates. And this is a commercial laboratory in St. Louis. St. Paul also claims a technician's school operated as a part of laboratory business. A college course for medical technologists is now being offered by the University of Minnesota, one by far the most complete and the most scientifically conducted of any school known up to the present time according to the bulletin.

A distinction must here be made between the advanced or specialized technician and the routine technician. The former is produced by such a scientific and systematic course as the University of Minnesota has just inaugurated or by several years of actual experience in larger scientific medical laboratories; while the latter may be trained in a comparatively short period of time by intensive practice and study such as outlined below. The writer is particularly interested in this latter class of technicians, who constitute at least 80 per cent of laboratory workers of today.

In a practical course of training of not over one year which aims to produce routine technicians and which probably appeals to the majority of young women, much of the didactic teaching is omitted and abundant opportunity for intensive practice is given. The two fundamental conditions in such a practical course are: First, a proper method of teaching and demonstration; and, second, an adequate source of teaching and practice material. The only analogous student life is found in the training school for nurses in which fully 80 per cent of their education is acquired through bedside practice.

A lecture room atmosphere should be replaced as far as possible by frequent group or individual conferences in which methods are demonstrated, and findings discussed in a simple and interesting manner. This should be supplemented by routine lectures and occasional quizzing.

The common conception is that a period of four weeks to three months is all-sufficient to fully equip a technician even including training in the technic of the Wassermann and blood chemistry. Even the schools referred to above offer a complete course in six months. Gradwahl⁷ prescribes one month each for blood chemistry, Wassermann and applied bac-

teriology and two months for the complete routine laboratory technic. His preliminary requirement is high school graduation or its equivalent.

Another institution offers in addition one or two lectures in each of various medical subjects and even in methods of bookkeeping, stenography and roentgenology, etc., to students ostensibly of high school education, all in a course of six months. The objection to such a course conducted by a commercial laboratory is two-fold: first, inadequacy of teaching material, both in number and variety available for repeated practice and mastery of technic; and, second, unavoidable high cost of training due probably to the taint of commercialism.

There, the primary importance is attached to a series of lectures delivered and copied. The laboratory period is merely devoted to the demonstration of methods and to the very limited amount of practice, not as elaborate but similar in extent to the course of clinical pathology in medicine from which no one has ever come out as an expert in technic. Opportunity for intensive training amidst many and varied specimens such as is afforded by a large clinical laboratory, where several hundreds of specimens of various descriptions are daily examined, is entirely lacking.

As a consequence the student merely receives working knowledge and not the mastery of technic while in training. Mastery in technic can only be obtained by devoting at least one full month of intensive practice to each of the various methods with a daily average of at least from twenty to thirty specimens. As for the Wassermann and other advanced laboratory technic, no prescribed period of training is advisable, several months of apprenticeship generally being necessary before the technic is mastered.

In a general way, these advanced methods and some of the routine examinations may be reliably performed by these technicians after sufficient training. It is, however, a dangerous practice to let them bear the entire responsibility unless they possess a thorough knowledge of fundamental sciences as well as technical skill.

The standardization of technicians may be accomplished by the adoption of the standard methods of training various classes of technicians with a fixed minimum required of a routine technician and by the comparative tabulation of the amount and character of their individual training and subsequent experience.

With the proper standardization and classification of technicians the standardization of clinical laboratories becomes a comparatively easy task, for the technical part of these laboratories is more and more being delegated to skilled technicians often without the close supervision of the pathologist.

The proper qualification and ability of the technician in charge then may be considered the first essential of standardization. Of second importance is the qualification of the medical man in charge, be he a pathologist, an internist or a general practitioner.

In the final analysis, the proper training and classification of technicians and proper equipment and standardization of clinical laboratories can never be consistently accomplished until the entire medical profession through the State Association or the State Board of Health or the State Board of Medical Examiners shall adopt a policy delegating these matters to a central control body whose duty may be briefly outlined as follows:

1. Registration and classification of technicians.
2. Standardization and classification of medical laboratories.
3. Standardization of terminology and report.
4. Censors of commercial laboratories.
5. Standardization of schools for technicians.
6. Standardization of methods of teaching future technicians.

The formation of clinical laboratories throughout the state into an association on the one hand and organization of registered technicians into a society on the other perhaps as a subsidiary to the Pathological Society or the State Medical Association may also be urged.

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DISCUSSION

DR. R. O. BEARD, Minneapolis: I agree for the most part with what Dr. Ikeda has said. Perhaps the best contribution I can make to the discussion is to report the demonstration made by the Medical School of the University. For the third time the topic of standardizing courses for technicians was presented to the Administrative Board last fall. They then authorized a survey to determine three things: First, the need of trained technicians; second, the demand of students for education in this field; third, the outline of courses which might be offered.

The inquiry on the first point proved very conclusively, as we had anticipated, that the demand for trained technicians was great and that it came from hospitals, institutions, group clinics, and physicians' private offices. Generally we met with the statement that these people were tired of untrained technicians whose limitations constantly put a handicap upon their success.

In the matter of students who might desire to undertake this work, we had a substantial surprise. A careful survey showed that thirty-seven students were on their way through a four year course for the B. A. degree whose objective was that of the technician. Study of their work showed that they had been largely misdirected and that much of it failed to contribute to their end result. The need for supervision was very clearly evident. We then outlined courses which were approved by the Board and have been in operation during the last year. We have now over fifty women in the University undertaking this work. All are headed for a four year course. In those cases in which work had already been undertaken, we are trying to make the rest of their course as effective as possible. The Bulletin offering these courses in technology proposes them not alone for clinical but for laboratory service as well. It is to be recognized that there are two groups—those desiring employment in laboratories for general clinical service and a smaller group desiring employment in teaching laboratories. We find women ready to undertake both fields, although by far the larger number select the clinical. They all take two years in the college of arts, in general chemistry, qualitative and quantitative analysis and organic chemistry, in biology, rhetoric, English, French or German, and physics. We have had no difficulty at all in securing the acceptance of these courses by these young women. Then follow two years of registration in the medical school. Four sequences are offered—a sequence leading to technical service in clinical laboratories; a sequence leading to technical service in anatomy and neurology; a sequence leading to bacteriology and immunity; and a fourth to pathology, neuro-pathology and gyne-pathology. We have students in each and all of these, but the major number are undertaking the sequence for clinical work. I shall be glad to send copies of the bulletin to any of you who may be interested in the matter.

I wish to say in support of Dr. Ikeda's argument and in recognition of the need of practical training that these courses provide for one or more quarters of clinical laboratory study. The courses are so arranged that the technical studies may be covered in the rest of the time. We are enjoying the co-operation of several hospital laboratories in the acceptance of these young women for training in practical laboratory service.

EMPHYEMA*

An Analysis of 100 Cases in Relation to Treatment†

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The interest in empyema was acutely stimulated by the influenza epidemic of 1918-19 and the chest injuries of the World War. A very great deal has been written on the subject and innumerable methods of treatment have been described. The fundamental principles upon which any treatment for empyema should be based remain the same. In the analysis of these 100 consecutive cases (from the Department of Surgery of the State University of Iowa), which have been studied in relation to the treatment for empyema, the endeavor will be made to emphasize these principles.

Arbitrarily, all cases entering the service within two months of the onset of the pleural infection have been grouped as acute and all the rest as chronic. These two groups will be examined separately. There were fifty cases in each group.

ACUTE EMPHYEMA

Etiology. In the fifty cases of acute empyema, twenty, or 40 per cent, were in the first decade, the youngest being seven months. The oldest patient was seventy-one. Lobar pneumonia was the primary disease in twenty-eight, or 56 per cent; influenza in eighteen, or 36 per cent; three cases were primarily infections of the pleura, and one was a tuberculous empyema infected secondarily by pyogenic organisms. The average leukocyte count was 20,200.

Diagnosis. The diagnosis is usually suspected by the course of the primary disease. The suspicion is strengthened by the change in the chest signs indicating fluid rather than consolidation, is greatly aided by x-ray plates and fluoroscopic examination of the chest, but is only verified by exploratory aspiration. This is too often delayed, in spite of the fact that it is a relatively safe and simple procedure.

It is not alone sufficient to make a diagnosis of empyema, but the nature of the exudate should be studied as to its consistency and the organism producing it. This is important in relation to treatment.

Treatment. When should an empyema be drained? Formerly it was taught and practiced that the presence of a cloudy exudate in the pleura containing pyogenic bacteria was an indication for immediate operation. Experience obtained during the influenza epidemic showed that this was wrong.

The pleural reaction to various forms of pyogenic bacteria varies greatly. There is also considerable variance in the reaction to various strains of the same bacterium. Characteristically an infection of the pleura by the pneumococcus is productive of a thick pus containing much fibrin, and there is a marked tendency for the pleural surfaces of the lung and chest wall to adhere at the boundary of the accumulated exudate, to wall it off and localize it. A pneumococcic empyema should generally be drained as soon as diagnosed.

A streptococcic infection, on the other hand, is usually characterized early by a relatively thin exudate, with a small cell content and very little fibrin. There is only slight tendency for the exudate to be localized by adhesions forming between the two pleural surfaces, and there is relatively little early thickening of the pleura. Later in the course of the disease, the exudate may become more distinctly purulent and localized. A streptococcic empyema ordinarily should not be drained in the early stage. Pneumothorax with marked collapse of the lung will often occur. This may cause an early operative death from disturbance of the mediastinal equilibrium or from putting one lung out of commission when the other is crippled because of a pneumonic process. Aspiration of the exudate is the treatment of choice in a streptococcic empyema in the early stages and this may be repeated. It will sometimes lead to a cure. Usually, however, the exudate will reaccumulate and become thicker and will later demand drainage.

Anesthetic. Novocaine infiltration was used in fourteen cases. It may be used successfully at any age. The youngest in this series was eighteen months. It is particularly indicated if the patient is a poor risk because of an active pneumonia, or extreme debilitation.

Nitrous oxide-oxygen was used in thirty-four cases, or 68 per cent. We believe it to be the anesthetic of choice where no contraindications to its use are present. Each year we are using it more often in chest surgery. It must be given by an experienced anesthetist.

*Presented before the Southern Minnesota Medical Association at Mankato, December, 1922.

†From the Department of Surgery, University of Iowa.

Ether was used in only one case. It is rarely necessary in acute empyema.

Operation. Pus must be demonstrated at the time of operation by aspirating needle, before the pleural cavity be opened. This is fundamental. Failure to observe this may lead to serious trouble. It is not enough that some other physician or yourself found pus by needle at some time prior to operation, be it ever so short. An empyema cavity is often very elusive.

Intercostal drainage was done in eighteen of the fifty cases. It is reserved for the desperately sick, especially with an active pneumonia, and for children with elastic interspaces. Even in infants a rib resection is often indicated because the chest wall has shrunk and drainage between ribs is inadequate.

Rib resection is the procedure of choice and was done in thirty-two cases, or 64 per cent.

Closed drainage was performed in ten cases. It consists of making the usual incision and resecting the usual amount of rib. Before the cavity is opened, sutures are taken in the cut muscles, but not tied. The pleura is then incised and the drainage tube inserted into the empyema cavity. A clamp is kept on the tube to prevent pus from escaping or air from being aspirated. The incision is then closed snugly around the tube. The clamp is now removed from the tube and the pus allowed to run out during expiration, the tube being closed with the finger during inspiration. After the cavity is emptied the patient is returned to bed with the tube connected with a longer one which is passed into a bottle of Dakin's solution sitting on the floor at the side of the bed. This prevents an early sudden pneumothorax, and probably tends to limit the size of the pneumothorax. It acts as a closed drainage for only a relatively short time, for within twenty-four hours to two weeks there is a passage of air and exudate around the tube. This procedure is used only in very early cases, in which there is less likelihood of a substantial localization of the process, and a marked pleural reaction following drainage is expected. In all cases used it proved very satisfactory.

The site of drainage of an empyema is of the very greatest importance. *Drainage should be provided at the most dependent portion of the cavity.* Observance of this rule would decrease markedly the number of cases of chronic empyema. Inasmuch as the patient will be in a recumbent or semi-

recumbent position following operation for a variable time, the drainage had best be not only dependent but placed in the posterior portion of the cavity.

Post-operative Treatment. This is important and must be carefully supervised.

Dakin's irrigation of the cavity has been used as a routine in the past three years and has proved of great value. It early diminishes the amount of discharge, dissolves the fibrinous clots and decreases the symptoms of infection. Its place in the after-treatment of these cases is established. However, no case has been seen in which a sterilization of a cavity has been obtained allowing the early removal of drainage tubes and closure of the tract with the idea that the cavity would remain sterile indefinitely or until obliterated. Such a procedure is not fundamentally sound.

Bottle blowing and other forms of respiratory exercises are begun early and carried out methodically and seem to have definite if not marked value.

The tubes are shortened very early so that they pass *only through the thickness of the chest wall.* This is important because damage may be done to the visceral pleura in its expansion if the tubes impinge, and furthermore their presence alone in the cavity may determine its continuation. Tubes are dispensed with entirely only when the cavity is practically obliterated.

Complications. The peritoneum was opened in two cases. These will be discussed later.

Bronchial fistula occurred in two cases. One of these was the result of using force in reinserting a drainage tube during the convalescence of a case. The tube had been forced out by the expanding lung. Fortunately the fistula closed without further trouble.

Lateral sinus infection.

Acute mastoiditis and smallpox.

Pyemia.

Thrombo-phlebitis—femoral vein.

Diphtheria, two cases.

Mortality. There were nine deaths, or a mortality of 18 per cent. Of these, five died of causes which were not connected with the operation or were uncontrollable, such as lateral sinus infection, carcinoma of jaw, etc.

Of the remaining four, three were operated upon for streptococcic empyema as complication of influenza. Two of these had an active pneumonia at

the time of operation. In each the operation was probably a contributing cause of death. These were among the early cases of empyema in the influenza epidemic of 1918. They would be treated now by early aspiration rather than early drainage.

In the remaining case the peritoneum was opened and death was directly due to the operation. This will be discussed later.

Results. Of forty-one cases surviving operation, there was a permanent cavity remaining in two. In one of these a very definite mistake in judgment was made in draining the chest. The exudate was not purulent, and following drainage a very marked collapse of the lung occurred. The end result was a large cavity. This was operated upon at another clinic and a Delorme operation done. The second case was one in which a pneumothorax developed following an exploratory aspiration, at which time no pus was found. Infection of the pleura occurred later, and the partially compressed lung did not expand to obliterate the cavity entirely. A Delorme operation was attempted but gave no promise of success, so a pedunculated muscle flap was used to obliterate the cavity with success.

There was recurrence of the empyema in one case. This patient had a bronchial fistula at the time of his acute empyema, but it had healed satisfactorily. At the time of the recurrence the bronchial fistula was again demonstrated.

Thirty-eight cases, or 76 per cent, apparently obtained permanent cures.

CHRONIC EMPYEMA

Etiology. Judging from the history of the case obtained from the patient or his relatives, influenza, as the cause of the pleural infection, headed the list in this group of fifty cases, with a total of twenty-three, or 46 per cent. Lobar pneumonia was next with thirteen, or 26 per cent, primary pleurisy ten, tuberculous empyema three, and pulmonary infarct one. The greatest number, thirteen, occurred in the fourth decade.

Seventeen cases of the fifty had not been diagnosed as empyema until the process had been present for from two to twelve months and were then sent into our service for operation. Several of these had been sent to the State Tuberculosis Sanitarium at Oakdale with the diagnosis of pulmonary tuberculosis.

One patient was referred to surgery from the medical service after four aspirations had failed

to clear up a streptococcic empyema complicating influenza.

One patient gave the history of pleurisy of six months' duration and the findings were those of fluid in the chest. He had a leukocyte count of over 20,000 and fever. The diagnosis was made of empyema and drainage done. Two drachms of pus which grew the pneumococcus on culture were found lying in a cavity with markedly friable walls. An apparent cure was obtained. The patient returned to the hospital six months later in a dying condition and a malignant tumor of the lung was found at autopsy.

The remaining thirty-one cases or 63 per cent had been previously operated upon. In twenty-two rib resection had been done and in nine intercostal drainage established. In four of the thirty-one, drainage had been done only after the infection had shown itself on the chest wall, pointing between the ribs.

Of the thirty-one cases which had been drained there was found rubber drainage tubing in two, which was the cause in each for the permanently draining cavity. In each a cure was established after removal of the tube. In one of these patients the tube had been in the cavity for twelve years. Its presence was not suspected for it cast no shadow in the x-ray plate. In the other the diagnosis was made by the x-ray.

One patient of this group of thirty-one had had drainage established by a competent surgeon for a supposed empyema two years ago. He was sent to our service because of a draining sinus. At operation a dermoid cyst, the size and shape of a grape fruit, was found. The cavity contained a large mass of cheesy material and matted hair, and the wall contained patches of skin-like epithelial tissue.

Three cases had been operated upon for what was clearly tuberculous empyema.

In the remaining twenty-five drained cases an attempt was made to determine from the history and the condition found, the reasons for failure to obtain cures. There were five outstanding causes for failure.

The commonest of these was failure to place the drainage opening at the dependent portion of the empyema cavity. In these cases there is a constant accumulation of pus below the level of the opening through the chest wall, with a continuation of infection, marked thickening of the pleura

and no opportunity for the cavity to become obliterated. Another frequent cause was the too early removal of the drainage tube. This allows a partial closure of the drainage tract until it becomes inadequate to drain the cavity satisfactorily and the cavity persists.

The third cause for failure was due to the too early drainage of the streptococcic empyema of influenza. In these cases the lung had greatly collapsed and the resultant cavity was so enormous that it never became completely obliterated by subsequent expansion of the lung, flattening of the chest wall and elevation of the diaphragm.

The fourth cause for failure was greatly delayed drainage of a large collection of pus. In these cases the lung is compressed due to pressure of the exudate and the visceral pleura becomes so thickened that expansion of the lung is markedly hindered.

The fifth cause for failure was the presence of a bronchial fistula. It is difficult to determine in any given case just how important this factor is in the maintaining of an empyema cavity. A communication between the cavity and a bronchus was present in fourteen of the entire group of fifty cases at some stage of the disease, judging from the history. The presence of a bronchial fistula was demonstrated conclusively in six by the injection of methylene blue or Dakin's solution. One of these died following operation. In only one of the remaining five did the cavity fail to close after proper drainage was established. This patient still has a bronchial fistula communicating with a narrow tract through the chest wall, and through it a probe may be passed as far as the hilus of the lung.

Treatment. Four of the fifty cases of chronic empyema were not operated upon.

Of the remaining forty-six, forty were treated by providing adequate drainage through rib resection. Three of these cases died following operation. The rest—thirty-seven in number—obtained apparent cures with the exception of the patient discussed above with the permanent bronchial fistula. One of the apparently cured returned one year later with an acute recurrence of his empyema. In all of these cases great pains were taken that the drainage provided should be dependent. In eight, drainage was made at two points in order to make sure that all portions of large and uneven cavities be adequately drained. All of these cases did very well.

After-treatment. Dakin's irrigation seems to have a greater value in this type of case than in the acute condition, and it is used as a routine. It is difficult to use in the presence of a bronchial fistula, because it is so irritating.

Respiratory exercises are also of definite value.

Great care must be used that drainage is not dispensed with too soon. With a small tube passed just through the thickness of the chest wall, it produces no pressure on the expanding lung and does not maintain the cavity by its presence.

Plastic Operations. These were done in six cases.

In two cases decortication was attempted. In each of these the cavity extended from the diaphragm to above the first rib. The operation was a failure in both cases, and an extensive collapsing operation was then done with only partially satisfactory results. These two patients will remain chronic invalids.

In one case of a draining tuberculous empyema a collapsing operation was done with marked improvement. The patient developed tuberculous peritonitis one year later. A collapsing operation was done in another patient with a double cavity, with a successful result.

In two cases, cavities of relatively small size were obliterated by turning in pedunculated muscle flaps. A cure was obtained in one. In the other an infected cavity still persists.

Mortality. Of the forty-six operated cases, death occurred in three, or 6.5 per cent. One patient aged fifty-three died twelve hours following a rib resection under eucaine anesthesia. No cause for death could be determined and autopsy was refused. Another patient developed a putrefactive infection of the operative wound following the drainage of a well localized cavity which communicated with a bronchus. He died on the tenth day. The third death was due to an extensive thrombosis of both common iliacs and the descending aorta which developed during an apparently normal convalescence.

Death occurred in one of the four unoperated cases. This patient had had a drainage operation two months before entering the hospital. She presented a small sinus which communicated with a bronchus. This sinus was injected with bismuth paste. Following this procedure she developed an extensive subdural abscess, which was drained. Autopsy showed no area of active infection in the

region of the sinus tract or bronchial fistula, and there was probably no relation between the injection of the bismuth paste and the intra-cranial infection.

SUMMARY

Too great stress cannot be laid upon the value of dependent drainage in the treatment of empyema. This is not without risk, however, and in these 100 cases an opening has been made into the peritoneal cavity in four. In three of these four cases pus had been first obtained by aspirating needle and the incision made over the rib either above or below the needle.

In case one, an acute empyema, rib resection was done and the peritoneum opened. The opening into the peritoneum was drained through the same incision as was the empyema cavity. About three weeks later a pelvic abscess developed which was drained per rectum and several ounces of sterile pus obtained. He developed a lobar pneumonia following this operation and died four days later.

Case two, an acute empyema, no pus was found by aspiration at the time of operation although it had been obtained a few hours before. Rib resection was done and the peritoneal cavity was opened through the diaphragm. The opening in the diaphragm was sutured and a rib resection done at a higher level. This entered the empyema cavity. This patient developed a subphrenic abscess which was drained and she obtained a cure.

Case three, a chronic empyema, rib resection was done and the peritoneum opened through the diaphragm. This was sutured and the empyema drained at a higher level. No complications developed.

Case four, chronic empyema, rib resection was done and the peritoneum opened below the diaphragm. This was drained by tube and another opening made at a higher level into the empyema cavity. No complications resulted.

Such an operative mishap may be guarded against by locating the pus with an aspirating needle before making the incision. It is very important that the needle be passed into the chest wall at *right angles* to it. After the rib has been resected over the cavity, then pus should again be demonstrated by needle before making an incision through the tissue beneath the resected rib.

The time to drain an infected pleural cavity is of the utmost importance and depends upon the character of the exudate.

Drainage must be maintained over a sufficient length of time.

Respiratory exercises during convalescence are of value.

All drainage material must be accounted for to make sure that it does not slip into a cavity and maintain infection.

Prolonged and adequate drainage of a cavity must be tried before a failure of cure is determined and plastic operation advised.

The decortication operation has failed in the few cases in which it has been tried in this series. The collapsing operations are often terribly mutilating, and in the average case I feel that the patient is better off with a permanently draining cavity which may be kept clean by daily irrigation.

A bronchial fistula has an inherent tendency to close, if adequate drainage of the empyema cavity is provided.

DISCUSSION

DR. C. H. MAYO, Rochester: I wish to thank the Committee for placing me on the list of speakers to open this discussion so that I may express my appreciation of the paper. It covers the subject thoroughly and takes me back to a realm of surgery with which I have had little to do recently.

The questions of diagnosis and the roentgen ray were not particularly discussed. The lung and pleural inflammations cover the major portion of empyema. Other cases occur with definite symptoms pointing to the condition. I think we must still find these cases by auscultation and percussion; the use of the needle is of the greatest importance, and it is seldom used until late. In passing the needle in I always like to insert it slightly obliquely with the rib until it passes the upper edge, and then turn it at right angles to insert deeper. Upon locating the pus I strap the needle with adhesive to prevent it from falling out; thus the possibility of losing sight of the pus, as suggested by Dr. Beye, is avoided. If the needle is definitely strapped in you can at least find the other end of it while it is still in place.

I think the roentgen ray sometimes leads to delay. I know that the roentgen ray does not always show that fluid is present. This fact can be best appreciated when the needle is inserted and fluid obtained. Last summer, in Rochester, New York, I saw a machine invented by Coolidge, which can be carried in a satchel. It is an oil immersion apparatus which works in heavy oil like the gear case on an automobile, and can be attached to any electric light socket. It gives a powerful current and is going to revolutionize roentgen-ray work. This, I believe, will be on the market some time this winter.

It is remarkable how quickly the mild infection, which is found on withdrawal of the fluid, becomes a large abscess. Two ounces of fluid drawn yesterday seemed to empty the cavity, but today on passing the needle a quart of fluid will be obtained, and the patient will be very sick.

Passing just beyond the period when ordinary inflammation of the lung should subside, when it fails to clear up, there is danger of empyema. If it subsides and the temperature again rises after rest of a day or two, then we also must look for empyema. Most of these cases can be found by means of the needle and the older methods. Dr. Beye's discussion recalled to my mind a particular patient from whom I removed three drainage tubes of good size. The doctor and the father of the patient were having a very argumentative and loud discussion in the operating room; the father said he knew those tubes were in and the doctor said they were not, that they had slipped down through the patient's trousers while he was walking around; I managed to slip them out quietly while they were talking. Always put a safety pin in no matter how safely in place the tube appears, and see that it is fastened with adhesive. Brewer has invented a flange tube which is to be used in large cavities, this tube can be folded and passed in. Another is slipped over the top so as to come up against the chest, drawing the inner one out, up against the pleura; the outer one is pushed up against the skin and it makes a very good double flange. While in Baltimore ten days ago I heard a report on two cases of empyema occurring within a few months in which the flange projected through an opening so close to the bottom of the pleura that it perforated the diaphragm. This is what Dr. Beye spoke of, an opening through the diaphragm and infection, a subdiaphragmatic abscess. It takes but little to go through the diaphragm.

Again I wish to express my appreciation of this paper because it is timely and calls attention to much that can be done, if it is done in time, and how often, even now, these cases go on to the utmost before they are recognized.

DR. A. C. BAKER, Fergus Falls, Minn.: It is not very often that we have the privilege of listening to a report of so great a number of cases. The essayist stated that he wished to emphasize the points that are well established at the present time. I think he has pretty well covered all the points in the treatment of empyema.

One thing mentioned was that the pneumococcic cases get well by early drainage. Historically, it is interesting to note that even Hippocrates made note of the fact that when you find an empyema with thick pus (pneumococcic), it should be drained; but in those cases where there is a rather thin secretion the patient may die if it is drained. Of course he did not recognize what the reason was, but it was because of the pneumothorax which took place in these cases where no adhesions are found and which prove so disastrous to the patient.

It might be well to reiterate some of the physiological points upon which we base our treatment of empyema cases.

In the first place it is well established that intrapleural pressure is less than the atmospheric pressure, and for reasons well known to all of us.

Secondly, that if an opening is made in the chest wall, collapse of the lung will take place. Graham and Bell established the fact of the definite relationship between the size of the opening in the chest wall and the size of the glottis. Knowing this, we can operate upon double empyema if we bear this in mind. The second consideration is that of the mobility of the mediastinum, knowing that the pressure on one side is just as great as on the other

and that it can neither be raised nor lowered on one side, in acute cases, without doing a corresponding thing on the other side.

The third consideration is whether or not there are adhesions.

Lastly, the vital capacity of the patient, which differs in different people.

Historically, it is interesting to refer to the fact that Walter was the man who did the first rib resection in 1860. It was in 1879 that Estlander did his operation. From 1860 to 1890, a period of thirty years, the attention of the medical profession was directed towards the bringing of the chest wall down to the lung. The literature of the time occasionally hints at the fact that it might be a good plan to bring the lung out to the chest wall and it was Delorme who first dissected the pleura in a small cavity. Fowler, two years later, did a large operation and he usually receives credit for establishing the fact that it can be done. Several modifications have been made, for instance, (1) separating the ribs so as not to cut away much of the rib; (2) insufflation of the lung; (3) the use of gridiron incisions; and (4) sometimes suturing the lung to the chest wall. Since 1890 most of our attention has been directed towards bringing the lung out to the chest wall.

Knowing the hazard that may accompany some of these operations, it is wise to consider the more conservative methods. Doctor Hedblom has impressed upon us the value of Dakin's solution, especially in chronic cavities.

The principal cause of a chronic fistula is a chronic cavity; and a chronic cavity is there because we have pneumothorax, a foreign body, tuberculosis or reinfection, or there may be a bronchial fistula or osteomyelitis of the rib. Knowing these things, as the essayist has stated, if you rule out osteomyelitis, tuberculosis and foreign bodies, the most important thing is to have adequate drainage or removal of the infection. As Doctor Hedblom has pointed out, there is no way in which this can be done so well as by dependent drainage and irrigation with Dakin's solution, and that means irrigation every two hours. It sterilizes the cavity, puts the patient in a better condition, disintegrates the membrane so that it becomes thinner and allows the lung to stretch out; on account of the lung coming closer to the surface we get a smaller cavity and in cases where operation must be performed the cavity will be small and we will not have to do one of those large deforming operations.

Having done these things—having treated our acute empyemas as the essayist has described and our chronic ones by ruling out osteomyelitis, foreign bodies and tuberculosis, and then thoroughly draining them at the most dependent portion of the cavity, sterilizing them by using Dakin's solution—then if they do not respond you will have to do a Delorme or some modification of the Estlander operation.

I wish to state that in empyema cases it is well to remember that when we are fooling around with a case of unresolved pneumonia many will be cured if you will just stick in a needle.

I am not going to say anything about tuberculous empyema, because I am sure Doctor Hedblom is going to speak on that subject.

DR. C. A. HEDBLUM, Rochester, Minn.: It is a pleasure to listen to a paper so comprehensive and illuminating.

The essayist reports that 33 per cent of his chronic cases had progressed for from two to twelve months without having been recognized as empyemas. We have had cases at the Mayo Clinic, existing anywhere from two to eight years, a great many developing bronchial fistula and coughing up from eight ounces to a quart of pus every day. These cases have been diagnosed variously as bronchiectasis, tuberculosis, or abscess of the lung, and treated expectantly without excluding the possibility of empyema by the simple procedure mentioned by Dr. Beye of inserting a needle to see if there was pus in the pleural cavity. These patients come to us in the late stages of chronic suppurative processes, some with advanced myocarditis, chronic multiple arthritis and, in some cases, long-standing deformities of the whole thorax. We have observed undiagnosed cases of bronchial fistula of from two to eighteen years' duration. The subject is a timely one, for the idea seems to be firmly rooted in the minds of the profession that all cases of empyema belong to the same category and, therefore, that the same treatment, resection and drainage, will suffice for all. The chronic empyema observed clinically proves that we still have much to learn with regard to diagnosis and treatment of the condition.

The diagnosis of tuberculous empyema is not easy because the positive proof is not always forthcoming, even in the presence of what proves later to be a tuberculous empyema. In the case of a patient with a history of repeated attacks of pleurisy with effusion, or with a focus of tuberculosis elsewhere, coincident with empyema, in my opinion the assumption is justified that the empyema is tuberculous until proved otherwise. If no definite etiology can be found, I believe that the fluid should first be cultured, even if frank pus is obtained. If there is no growth on the culture medium, the empyema should be considered tuberculous until proved otherwise. If the patient comes with a draining sinus, as is usually the case, examination of the exudate will, in many instances, establish the diagnosis of tuberculosis. In certain cases it may require repeated examinations over a long period of time, just as it is often difficult to find bacilli in the sputum in certain cases of pulmonary tuberculosis; yet the failure to find them does not necessarily exclude tuberculosis, and in some cases in which bacilli are never found, the pleura will show the characteristic histological picture.

I am glad that Dr. Beye mentioned the relative merits of the open and closed methods of treatment in acute empyema, as this question is much discussed. Many adhere to the idea that the rib must be resected and an opening made in the chest wall to establish drainage. I believe that in acute, fulminating, streptococcic empyema open drainage is contra-indicated. The open drainage has much in its favor, particularly if one has not facilities for treating the case by the closed method, but if such facilities are available, the closed method is preferable. For instance if drainage by the usual rib resection is established in the case of an empyema of about two liters' capacity, evacuation by gravity of most of the pus is all that can be achieved. The lung remains more or less collapsed. It will usually expand, but one has no assurance that it will do so. If, on the other hand, closed drainage is instituted and two liters of pus are aspirated, the lung is expanded by

that volume, the remainder of the pus is drained off, and the lung is expanded completely. By the proper use of a sterilizing solution, such as hypochlorite, not only has drainage been effected and the surfaces mechanically cleansed, but sterilization of the infection has in a large measure been effected. It is true that if an incision is made and tubes are sutured in, leakage will soon follow, but if a catheter is inserted through a trocar and cannula, using a tube that fits the cannula accurately, the opening will remain air-tight for from ten days to two weeks and with a little care can be maintained practically air-tight indefinitely.

If precautions are taken in irrigation to prevent air entering, the lung will remain expanded. By using a relatively large amount of fluid at each irrigation, all parts of the cavity are washed and encapsulation of any part is prevented. A sinus or a small pocket will result, for which a rib resection can be performed without material risk to the patient.

The treatment of chronic empyema is such a comprehensive subject that I can touch on only a few of the main points made by the essayist. I should like to emphasize that the chief cause of chronicity, according to my observations, is ineffective drainage. The most common reason for the ineffectiveness of drainage is that the drainage opening is allowed to close down to a narrow sinus, so that pus accumulates, and the cavity, if it has been partly obliterated, enlarges. The opening may have been at the right point and may have been large enough to begin with, but the drainage tubes are removed and the opening in the chest wall is allowed to close down before the cavity inside has become obliterated. There are other causes of chronicity, such as drainage material and other foreign bodies in the cavity. The essayist did not mention the sequestered fragments of rib. I believe that, when the rib is resected and the periosteum stripped off back of the point of resection, the denuded ends may become infected and sequestered fragments eventually drop into the cavity, infection persisting until they are removed.

The more one searches for tuberculosis, the more often one finds it in chronic empyema. We have had a series of 313 cases of chronic empyema, 10 per cent of which were proved tuberculous, and in another 10 per cent of which the presence of tuberculosis was assumed. During the last year, when we made a more careful study of these cases, the percentage of positive cases has risen to sixteen.

Chronic bronchial fistulas are also more often present than is generally recognized. In our series of 313 cases were fifty-four cases of bronchial fistula. Sometimes they can be recognized only by some such method as the injection of salt solution, or salt solution stained with a little methylene blue.

With regard to treatment, if the patient has a sinus a catheter is slipped in and the cavity irrigated persistently. It will usually decrease from 50 to 95 per cent in capacity; a small plastic operation is then performed to obliterate it completely. I am not optimistic enough to dismiss a patient with a cavity, however small, draining through a narrow sinus, because a good many, if not the majority, will have recurrence of the empyema. If the cavity will not become obliterated, decortication or a plastic operation may be re-

sorted to; it has been my experience, however, that unless the cavity is more or less globular, decortication will probably be of little value. It is usually not so effective if the cavity is large, long and narrow, or flat and thin. The cases for decortication should be chosen very carefully. In cases of large cavities that will not disappear under treat-

ment, especially if of tuberculous etiology, an operation of the Wilms type in which the ribs are resected extrapleurally in segments under local anesthesia may be indicated. The whole cavity can be collapsed by this method with a minimum of operative risk, even in the presence of an active tuberculous process.

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EDITORIAL

The Doctor and the Public

Dr. Scofield's paper in this issue presents many questions to the medical profession which will repay careful study. As dangers from within, he cites commercialism, unethical conduct and petty jealousies. Might there not be added an apathy on the part of medical men towards public affairs and politics? Where do you find a civic association where medical men are looked up to as men whose opinions are of value? What do lawyers as a class think of expert medical testimony? How much effort are the medical men as a body making to educate the public as to what the medical profession in the past has meant for humanity?

Dr. Scofield states that the danger from without is the army of irregulars, paths, cults and healers. The danger from without is from an uneducated public opinion, which finds expression through the cults.

The basic factors underlying this state of affairs rest primarily on the shoulders of the medical profession itself. If the doctor shuts himself up in his

shell and fails to make of himself a public spirited citizen of importance in his community, the end result is going to be worse than it is at present.

The medical men of Illinois have raised a sum of \$10,000.00 for public health lectures, magazine and newspaper articles, and radio broadcasting of an educational nature. *Hygiea* and the *North-western Health Journal* are not going to reach the mass of the people who most need it. The suggestion has been made to the American Medical Association that they amplify the Brady idea in a campaign of public education along medical lines through the public press, and we think it a good one.

The osteopaths and chiropractors in Minnesota today number 500. The medical men number about 2,300. And yet on legislative matters these cults exert an influence over fifty per cent instead of what should be less than twenty per cent.

Dr. Scofield states, "As I see it all, the man in regular medicine has not been awake to his duties, possibilities and dangers. He has been self-centered, tending strictly to peddling his pills and welcoming the newest arrival."

What are we going to do about it?

—F. J. S.

Postgraduate Study

Experience in the late war clearly demonstrated that a great many physicians in this country had for some reason failed to advance their knowledge after medical school graduation at a rate commensurate with the advance of general medical education during the corresponding period. The reason for this laxity is somewhat difficult to ascertain. Lethargy, the necessity of attention to the demands of practice, failure to realize their shortcomings or the necessity of overcoming them, lack of facilities for postgraduate instruction, and many other causes may have been factors in bringing about this condition.

It is obvious that the experiences associated with the war were the means of rousing the profession to a realization of the necessity of keeping abreast of the times, medically speaking. This in its turn has produced a quickening of the forces which are calculated to furnish an opportunity for transmitting to the practitioner in an easily assimilable form the requisite information.

The demand for positions as assistants, for fellowships and for postgraduate study in this country

was never so great as it is today. The attendance upon such great conclaves as the Clinical Congress of North America, the various societies of this locality such as the Tri-State, as well as the enthusiastic acclaim with which the Minneapolis and St. Paul Clinic Weeks have been welcomed and supported, all bear eloquent testimony to a tendency on the part of the substantial medical practitioners, which bespeaks an improvement in the class of service which they will be able to offer the public in the future.

Anyone who has witnessed the spectacle of a large group of physicians assembled at 7 A. M. to remain in constant attendance until 11 P. M. day after day, attending lectures, clinics and demonstrations, must realize that there is a thirst for knowledge in such a body which is unquenchable.

One of the most illuminating features of this new order of things is the fact that those to whom the honor of offering instruction is delegated are themselves so greatly benefited by the exercise of the teaching function. The efforts required by those who impart knowledge of this nature under such stimulation acts as a great force in their own development.

The more universal the interchange of ideas between the practitioners and the specialists can be made, the more beneficial will be the results to the general public in whose behalf our arduous labors are performed.

It seems befitting and in keeping with the demands of the times that the Minneapolis Surgical Society at its May meeting decided to deviate from its usual custom of holding an evening meeting once a month, to amplify its activities by inviting physicians to attend a "Clinic Day" on the first Thursday of each month. Throughout this Clinic Day, demonstrations, lectures and clinics will be offered at the local hospitals, and in the evening the visiting physicians will be invited to attend a dinner and listen to the usual evening program, which will consist of case presentations and a scientific paper upon some topic of a surgical nature.

It is to be hoped that this innovation will offer to the general practitioners of this locality one more avenue to postgraduate education.

The Education of Laboratory Technicians

The modern practice of medicine, sometimes designated as the laboratory practice of medicine, has produced such rapid and radical changes in

the character and methods of diagnostic procedures that in many cases organization of these procedures has hardly kept pace with our advancement. It is only a few years ago that the professor in his laboratory was waited upon by his *Diener* who took care of his specimens, ran his errands and often acquired a very expert familiarity with the professor's favorite methods of diagnosis and research. He was a hand-picked and hand-trained individual. The significant changes which have occurred are emphasized when one compares such a *Diener* with the organization of the modern laboratory in which numerous quite distinct technical trades and professions, involving a high order of skill and mental equipment, are grouped together for carrying out the routine processes of diagnosis.

Many have expressed concern over the question of the proper education and certification of this rapidly growing and important group of medical aides. Representative of these opinions is the paper by Dr. Walter E. King in the April number of MINNESOTA MEDICINE, and, in this number, the paper by Dr. Kano Ikeda. Naturally it is altogether desirable that as soon as any special trade or profession has reached a point where its fundamentals have become soundly established, some method of classification as to education and merit should be provided. The demand for satisfactory courses of instruction for such assistants is already finding a certain supply. It is possibly a matter of debate as to whether all of the innumerable classes of technical assistants are yet sufficiently capable of clear definition as to make it possible to set any clear standards of education or proficiency. We may, however, look forward hopefully to the time when the co-ordinated efforts of the members of the various technical branches and those of the medical profession which they serve will lead to more uniform standards of education and more clearly distinguishing criteria of individual fitness. That a college for technicians or degrees for technical proficiency are demanded at this time, is certainly subject to grave doubt.

H. E. R.

It is a great pleasure to welcome Dr. Donald K. Bacon as an assistant editor of MINNESOTA MEDICINE. At the last meeting of the Editing and Publishing Committee Dr. Bacon was appointed to replace Dr. Everett K. Geer, whose resignation had been tendered on account of his inability to devote

his energies to the work of the journal.

We take occasion at this time to express our appreciation of Dr. Geer's co-operation and interest in MINNESOTA MEDICINE and our regret that this step seemed advisable.

Dr. Bacon has for some months been of great service in the editorial work of the journal and has kindly consented to supervise the Book Review department. Any assistance which members can give Dr. Bacon in the matter of book reviews will be greatly appreciated.

MISCELLANEOUS

PROGRESS IN THE PREPARATION OF PANCREATIC EXTRACTS FOR THE TREATMENT OF DIABETES*

JOHN R. MURLIN
Rochester, New York

*Abstract of address presented before the Hennepin County Medical Society, April 17, 1923.

Science seldom advances by perfectly logical steps. A great discovery may set us on the way, but there often ensues a period of groping with little to show for the effort made. Minkowski's discovery that the pancreas is the seat of diabetes brought us out of the woods at the base of the mountain, but Banting showed the way to the summit. The history of intermediate efforts reveals many failures to realize upon the hope engendered by Minkowski's contribution. Zuelzer in 1908 came very near to success by means of his extract obtained from fresh pancreas purified of protein by means of alcohol very much as is now done by the Toronto investigators.

An additional vantage point was gained by the researches establishing the islet tissue as causally related to the disturbance in surface metabolism. The first to act upon the theory that the internal hormone of the pancreas is destroyed by trypsin was Croftan (1910). He was followed by Scott (1911), who attempted ligation of the ducts and consequent degeneration of the acinar tissue in 1911. Knowlton and Starling (1912) obtained improvement in the utilization of sugar by the heart by means of a pancreatic extract and Clark (1916) accomplished the same by perfusion of the pancreas.

The writer became interested in the subject in 1912, the motivating idea being that the duodenal mucosa might play a part in the activation of the internal as well as of the external secretion of the pancreas. Extracts were made in weak acid which stopped the excretion of sugar when injected intravenously into depancreatized animals. This effect, however, was complicated by the action of alkali and for three years we were diverted from the study of pancreatic extracts *per se*. Later, however, it was found that extracts made in weak acid and administered by stomach with glucose and weak alkali would restore to a limited degree the power to oxidize glucose.

Work was resumed in 1921 upon pancreatic extracts made in weak acid, and upon the perfusion method of Clark. The most recent results from the physiological laboratory at Rochester, N. Y., show that: (1) the extract in weak acid is stable at an H-ion concentration of PH 5.7; (2) it is not destroyed by heating to 80° C. for half an hour at a PH of 6.7-7.2, but is destroyed by this temperature at PH of 4.4-5.7; (3) it is not lost by dialysis for 4-12 hours through thin parchment paper; (4) the active principle (insulin) is probably not a protein; for its potency seems to be inverse to the N. content; (5) it is precipitated from watery solution in a high state of purity by three classes of substances: (a) alcohols—methyl, ethyl, propyl, butyl, amyl and capryl; (b) by trichloroacetic acid and acetone; (c) in less pure form by ammonium sulphate in one-half saturation and by sodium chloride; (6) insulin can be obtained from the pancreas of the pig by perfusion in much larger amount per unit weight of pancreas than by extraction of the whole gland. It is also much purer when so obtained and therefore requires much less subsequent treatment than by crude extraction.

FURTHER OBSERVATIONS ON THE COINCIDENCE OF SHINGLES AND CHICKEN-POX

C. EUGENE RIGGS, M.D.
St. Paul

Since the publication of my article on this subject in MINNESOTA MEDICINE, November, 1922, I have received five letters from physicians calling attention to this interesting relationship. Four of these letters describe typical examples of herpes zoster followed by chicken-pox within the usual period of incubation of twenty-one days. In one instance, chicken-pox occurred in an adult. The fifth furnishes an excellent illustration of herpes zoster and chicken-pox occurring in the same person—a rare happening.

A brief summary of each, my professional confrères, I believe, will find not only interesting but confirmatory as well of my contention that these frequent coincidences are more than casual.

Case 1.—Dr. John W. Shuman, Professor of Internal Medicine, American University of Beirut, Syria, writes Dr. Drake as follows:

"Editor,

"MINNESOTA MEDICINE—

"It is interesting to note in connection with Dr. C. E. Riggs' article, 'Coincidence of Shingles and Chicken-Pox,' that I can tie him with a similar coincidence in our own household. Madame Graham developed herpes zoster (costal) December 3rd. My son, Richard, age 7, two weeks later, developed chicken-pox, and his brother, John, age 9 years, one week later, had the same affliction. Up to the time of the first lad's trouble, no cases were in the community (American) school. Since, there have been a number of cases. Our third and youngest, aged three years, daughter Jeanne, today shows slight skin lesions of chicken-pox. All three have been vaccinated. Just what is the relationship, if any, of herpes zoster and chicken-pox?"

Case 2.—Dr. H. M. Sybilrud, Bricelyn, Minn., writes:

"I received your reprint on 'The Coincidence of Shingles and Chicken-Pox' about two weeks ago. It so happened that at that time I was treating a case of herpes zoster, right thoracic region. This evening, much to my surprise, a member of this family asked me about the incubation of chicken-pox. Naturally, I became inquisitive and obtained the following history: On February 1, 1923, Mrs. M., age 54 years, came to see me, with a typical case of herpes zoster of three days' duration. She was accompanied by her daughter and son-in-law, who lived with her. On February 15, 1923, the latter had a severe chill and fever during the night. The next day he found himself covered with a chicken-pox rash. I saw the case today, February 24, 1923. There were several typical chicken-pox scabs remaining on his body. The other members of the family had all had chicken-pox. There was no history of exposure in this case."

Case 3.—Dr. J. E. Chassell, Belle Fourche, S. D., writes March 19, 1923:

"Have just been reading your article, 'Coincidence of Shingles and Chicken-Pox'; it recalled to mind a case of shingles in an elderly woman last spring and that there were two cases of chicken-pox in the same family. I was called to see this woman May 24, 1922, and found she had a severe case of shingles. June 12, a grandson, aged five years, came down with chicken-pox; another grandson had it three weeks later. I do not know of any other case of chicken-pox anywhere around, at or near this time. Had there been, I think I should have known it as I am City Health Officer and County Superintendent of Health. I am giving you this information and you can take it for what it is worth."

Case 4.—Dr. H. E. Webster, of Duluth, Minn., writes:

"The 'Coincidence of Shingles and Chicken-Pox' did not strike me until I read your paper and as the literature on this relation is absolutely silent, I thought you might be interested in learning of my experience. A father consulted me about a rash which he had on his left side, which I diagnosed as herpes zoster. Ten days or two weeks later, I was called to his house to see his small daughter—about seven years of age—and found her suffering from a beautiful case of chicken-pox."

Case 5.—A neurological confrère writes than on March 20 his wife experienced pain in the small of the back; this gradually increased in severity. Three days later it became very severe and localized itself entirely to the left of the spine. There was a slight temperature at night; she was sleepless and very restless. Associated with the pain was muscular twitching of a myoclonic nature, which affected the left abdominal area above the navel. This was followed by a typical herpetic eruption about three inches wide in the same region. On the day of its appearance, there was noticed distinct papules—one on the right arm and one or more on the left trunk below the zone of eruption. For several days, similar papules with slight vesicular tips appeared on trunk, neck, face and in the hair—about a dozen in all. These have now disappeared with the exception of one more prominent papule, which

had for a time a distinct reddish hue, slightly indurated at the center. The eruption resembled in every way that of chicken-pox.

This differed from LeFeuvre's cases in that it occurred on the same day as that of the herpes, while in his there was an interval of from two to five days between them.

To the American cases reported in medical literature, through the courtesy of my confrères, I am able to add five more. I have also received two inquiries regarding the treatment of herpetic neuralgia in elderly people. According to Sicard, this never occurs under thirty years of age. If the pain persists for months, recovery is rare. After a year's duration, it may be regarded as permanent. Treatment is most unsatisfactory. Injections of alcohol and section of the posterior roots have been disappointing. The application of the constant current for the relief of pain may give marked benefit and as a form of therapy is not to be despised.

Two facts should be emphasized:

- (1) Herpes zoster may give rise to an epidemic of chicken-pox.
- (2) Chicken-pox may give rise to herpes and since the latter is a serious menace to elderly people, every precaution should be taken to guard against their exposure to this disease.

OBITUARY

LIEUT.-COL. WILLIAM MALLOCH HART, M.C., M.D.

The recent death in Ottawa of William Malloch Hart, of intestinal obstruction following appendicitis, brings to attention the life of a doctor that has reflected rare honor on our profession, and brought forth from his Canadian confrères and friends a most unusual burst of human feeling, admiration and pride.

While he was not in Minnesota long enough to become a member of this, our State Society, still he is destined to have a very high position in the medical historical annals of Minnesota, particularly dealing with the control of tuberculosis. The recent thorough review of the epochal events in the campaign against tuberculosis in our own state has just appeared in the May number of MINNESOTA MEDICINE, from the pen of Dr. Longstreet Taylor, who was in this most necessary field of disease prevention decades ahead of his time. In naming over some of those connected with the early work, much of the credit apportioned to the writer by Dr. Taylor, for early legislative effort and county work, was really due to Dr. Hart. The writer first met him when he was still a bed patient with two hours of daily cautious "sitting up" at Saranac Lake.

He came out to Duluth and located Nopeming Sanatorium about one year later. His choice of a site was made on the same percentage method of determination that he chose a room to live in while the first administration building was being erected; 15 per cent was the value set against "convenience and accessibility"; 10 per cent for "sunlight and ventilation," etc. This gives a hint of his fundamental

approach to any of life's problems; it shows why he succeeded where so many fail; and why, in his success, he pointed the way to hundreds and thousands of others. Most of all did he show to all with whom he came into close contact, what it really meant to "live the cure for tuberculosis," and transform it from a hideous interference with a chosen vocation into the glowing purpose of one physically redeemed.

The first hot, salty certainty of an early hemoptysis came to him at a time when the whole horrible idea of pulmonary tuberculosis assaulted his consciousness with a heavy and devastating hand. It is well known that men who themselves have had tuberculosis make the best sanatorium executives. The reason for this is evident: years afterwards he feelingly asserted that he never began to overcome his lung lesion until he had overcome himself; this turning point came to him gazing up into the starlight heavens from his "Klondyke bed" in the Adirondacks. There he won the battle; the subjugation of his own hostile attitude built upon his own prearranged plan. This over, he entered a new life, and the brief recital of his accomplishments shows again the great virility of the transplants—the tribute to the Great Teacher Trudeau—for like many others, he proceeded to spread the idea of the curability of tuberculosis across this great American continent.

Let the minister who gave his funeral eulogy speak:

"Like a knight of the Middle Ages, seeking a foe worthy of his steel, William Hart learned early what his life work was to be—fighting the terrible White Plague. In the great Sanatorium of Saranac he learned the magnitude of his task and the best methods of accomplishing that task. At Duluth he soon had an opportunity of giving practical effect to what he had learned. So highly appreciated were his services there that when he resigned to take up work in his motherland the directors of the great hospital he had organized requested him to name his successor, agreeing to appoint him without advertising the vacancy. That nominee still directs the work in Duluth with success and mutual satisfaction.* What William Hart accomplished in organizing the work in the neighboring province of Saskatchewan is known to all the medical men present and needs no word from me.

"When the Great War broke out he was among the first to enlist, and he enlisted as a private. A man of his gifts and training was soon called to positions of higher responsibility. As to the spirit in which his services were rendered, ample testimony is borne by that military cross con-

*Dr. Arthur T. Laird.

ferred upon him by his King. The ability which characterized his work is revealed by his rise from the ranks to the high honor and responsibility of a Lieutenant-Colonelcy. Our presence and sorrow here today disclose with what pride, love and sympathy we follow his steady advance."

The man whose life had been despaired of for nearly three years, went, with his regiment, into the second great battle of Ypres, and, "with his always characteristic devotion to duty, advancing too far in aiding his wounded men, was made prisoner." He sent to some of his American friends a copy of a personal diary, reciting the events and circumstances of his capture and life in the German prison.

It was singularly free of any taint of personal hostility to his captors; it amplified and elevated every possible evidence of their thoughtfulness and care. After his transfer as a prisoner of war he was placed in charge of the Canadian tuberculosis hospital at Lenham, in the south of England. Later, after demobilization, and on his return to America, everyone was astonished by the degree of physical recuperation he presented.

It will do us good at this time to review these features of his life. Despite the decrease in the incidence of tuberculosis, now so greatly appreciated, there is still a very fair number of our own fellows who have to submerge their personal ambitions in the awful knowledge that they also have the dreaded disease. Let them get a feeble reflection of the inspiration of his life from this very incomplete recital.

E. L. TUOHY.

DR. ARTHUR B. ANCKER

Dr. Arthur B. Ancker, for forty years superintendent of the City and County Hospital, Saint Paul, died suddenly in his office, May 15, 1923, at the age of 72. Dr. Ancker had been suffering from myocarditis for the past three years but had so successfully withheld the fact from even his more intimate associates that his death came as a distinct shock.

Dr. Ancker was born in Baltimore, March 20, 1851, and spent his youth in that city. His first inclination was towards the sea, but finally he studied medicine in the Medical College of Ohio in Cincinnati. He went to Saint Paul directly after graduation in 1882 and practiced there until the next year when he was named superintendent of the Saint Paul City and County Hospital upon its re-organization in 1883.

On August first of this year, Dr. Ancker would have completed 40 years as superintendent of the hospital. It was largely through his untiring efforts and his particular genius for organization and administration that the hospital grew from its small beginning to the magnificent hospital of 800 beds which it is today. The original hospital was a modified dwelling purchased from Dr. Jacob Stewart which occupied the present site of the hospital. Addition after addition has been added to the hospital until the present physical valuation of the institution is more than \$2,500,000.00.

As superintendent of the hospital, Dr. Ancker was continually making plans for improvements. This year his efforts were bent toward procuring the appropriation for a new building for the contagious department but unfortunately the appropriation was not obtained.

Dr. Ancker was a member of the organized medical profession and also a member of the American Hospital Association and of the editorial board of *Hospital Management*. He was for a time president of the American Hospital Association.

Dr. Ancker is survived by his widow, by three sisters, Mrs. Delia Elkins, Hartford, Connecticut; Mrs. Adolph Bitterman, Evansville, Indiana; Miss Ella Ancker, Saint Louis and a brother, Abram Ancker, Evansville, Indiana.

DR. A. M. EASTMAN

The following resolution was passed by the State Board of Medical Examiners at the time of the death of Dr. A. M. Eastman, which occurred February 24, 1923:

It is with deep sorrow that we chronicle the death of our esteemed colleague, Dr. A. M. Eastman. He had been a member of the Board for six years.

From the first meeting, he evinced an intelligent interest that never waned. Always ready with most sane and wise advice, he was also ever anxious to do any amount of work necessary for the success of the Board.

His courtesy and geniality, his exuberance of spirit and humorous wisdom were always a delight and a never failing wonder to his brother members.

We, who knew him best, who have experienced his many fine qualities, are loath to believe that we can never again have his cheering presence with us.

To his family we extend our most heartfelt sympathy in this bereavement which we share with them.

THOMAS McDAVITT, M.D.,

Secretary,

Minnesota State Board Medical Examiners.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

UNIVERSITY GRADUATE SCHOOL

Professor K. S. Wenckebach, Professor of Medicine at the University of Vienna, internationally known for his work on the heart will give the following lectures at the University under the auspices of the Graduate School:

Monday, June 4th, 4:30 P.M.

Tuesday, June 5th, 4:30 P.M.

Wednesday, June 6th, 1:00 A.M.

The profession is cordially invited to attend.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The mid-summer session of the Southern Minnesota Medical Association will be held at Faribault, June 11, 1923. Headquarters will be at the Minnesota School for the Deaf where all sessions will be held and the luncheon and banquet served. The proceedings will be more of a clinical character than ordinarily.

At the banquet to be held in the evening, Dr. C. H. Mayo will make an address on "The European Clinics of Today."

The program includes the following clinics:

Dr. D. E. McBroom, Faribault—Types at the School for Feeble Minded and Colony of Epileptics.

Drs. O. W. Rowe, Duluth, H. F. Helmholtz, Rochester, Walter Ramsey, St. Paul, and F. C. Rodda, Minneapolis—Pediatrics.

Dr. J. N. Tate, Faribault—Education and Care of the Deaf.

Drs. S. Marx White, Minneapolis, R. M. Wilder, Rochester—Insulin.

Dr. Archibald MacLaren, St. Paul—Gastric Ulcer.

Dr. A. W. Adson, Rochester—Neurological Lesions.

Dr. E. Starr Judd, Rochester, will present a paper on "Management of Infections of the Biliary Tract" and Dr. Archie Wileox, Minneapolis, one on "Problems of Industrial Surgery."

At the business meeting of the association, important matters bearing on the changing of the dues, number of meetings each year, the place of meeting, etc., as considered in former sessions, will be formally voted on.

The meeting will be concluded about 9:30 in the evening so that those driving may leave for home the same evening.

Dr. F. U. Davis, Faribault, is chairman of the Committee on Arrangements.

NEW CANCER SOCIETY

It has been proposed by many physicians to form an American Society for the Scientific Study of the Medical Aspects and Treatment of Cancer, the exact name and plan of work to be determined after it is organized.

As so many of the profession expect to gather at the coming meeting of the American Medical Association, in San Francisco, June 25 to 29, this year, it has been thought that that occasion would offer a good opportunity for the consideration of the matter. The plans, scope and details, and also the name of the Cancer Association could then be worked out, and the organization effected.

A call has been issued to those especially interested to come together in San Francisco and form the proposed association.

MCLEOD COUNTY MEDICAL SOCIETY

A meeting of the McLeod County Medical Society was held at Glencoe, Saturday, May 5, 1923, with a record attendance. The principal address was given by Dr. John L. Shellman, Saint Paul, his subject being "The Eye."

A banquet was given in honor of the attending physicians in the offices of Drs. Schmidt, Langhoff, Tift, Beruns and Jungclauss, which had been converted into a banquet hall with suitable decorations for the occasion.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Northern Minnesota Medical Association will be held June 4, 5 and 6, 1923, in Alexandria. The names of those who will participate in the program appeared in the April issue of MINNESOTA MEDICINE.

Sinclair Lewis, the novelist, brother of Dr. C. B. Lewis, president of the association, will address the meeting Monday evening, June 4.

PARK REGION MEDICAL SOCIETY

The quarterly meeting of the Park Region Medical Society was held at Fergus Falls, Wednesday, May 2, 1923, followed by a banquet served at the Kaddatz Hotel.

The scientific program included the following papers:

Dr. W. W. Drought, Fergus Falls—Some of the Old Pioneers in Surgery.

Dr. A. J. Lewis, Henning—Some of the Interesting Complications of Pregnancy and Labor, With a Report of Cases.

Dr. A. B. Cole, Fergus Falls—Medical Legislation of the Last Session of the Legislature.

Dr. O. M. Haugan, Fergus Falls—Diabetes and the Insulin Treatment.

The discussion of the evening was chiefly concerned with Dr. Haugan's paper. The society accepted the invitation of Dr. W. S. Broker to hold the next meeting in July at the Otter Tail County Sanatorium.

OF GENERAL INTEREST

Dr. A. Mahowald, formerly of Richmond, is now located at Breckenridge, Minnesota.

Dr. and Mrs. J. W. Andrews, of Mankato, recently returned from a trip to South America.

Dr. and Mrs. Abrams, of Rochester, are the parents of a son, Robert James, born May 3, 1923.

Dr. Justus Ohage, Jr., Saint Paul, announces the removal of his offices to 640 Lowry Bldg.

Dr. L. W. Barry, Saint Paul, addressed the Washington County Medical Society, April 8, 1923, at Stillwater.

Dr. and Mrs. F. R. Woodard, Minneapolis, have returned from a three months' stay in Daytona, Florida.

Dr. and Mrs. Horace Lyons, of Rochester, are the parents of a baby daughter, Alice Murdock, born May 10, 1923.

Dr. Robert Emmett Farr, Minneapolis, gave an address before the Illinois State Medical Association at Decatur, May 16.

Dr. L. W. Barry, Saint Paul, has severed his connections with the Miller Clinic and has opened offices at 810 Lowry Building.

Dr. F. J. Hirschboeck and Dr. W. R. Bagley addressed the members of the Interurban Academy of Medicine at Duluth, May 17.

Dr. Charles W. More, of Eveleth, was appointed by Governor Preus recently as a member of the advisory commission of the state sanatorium.

Dr. A. W. Ward, of Minneapolis, is now in Europe where he will spend three months in post graduate surgical work at Paris, Berlin, Vienna and Rome.

Dr. A. W. Adson, of Rochester, was recently elected president of the Rochester Civic Association, a new civic club which is a merger of all the civic organizations in the city.

The Merriam Park Hospital has announced the completion of its obstetrical service under the direction of a superintendent and an associate especially trained in this service.

Dr. P. F. Holm, of Wells, is now located in Los Angeles,

where he will continue the practice of medicine. Dr. Holm has been a practicing physician at Wells for twenty-four years.

The American Urological Association held its twentieth annual meeting in Rochester, May 21, 22, and 23, 1923. Dr. W. F. Braasch, of the Mayo Clinic, had charge of the local arrangements.

Dr. and Mrs. Frank E. Burch and Dr. and Mrs. George Earl, of Saint Paul, have returned from a trip to Panama and South America in connection with the American College of Surgery.

Dr. Walter G. Sahr, who recently returned from Europe where he spent two years in the study of surgery at Vienna and Budapest, has located in Hutchinson for the practice of his profession.

Dr. Clarence A. Ryan, who has been superintendent of the Buena Vista Sanatorium, Wabasha, for the past year, resigned from his position June 1. As yet no one has been appointed to succeed Dr. Ryan.

Dr. G. E. Rice who received advanced degrees in surgery from the University of Minnesota, April 2, left Rochester May 18, 1923 for Pueblo, Colorado, where he is to be connected with the Pueblo Clinic.

Announcement has been made of the engagement of Miss Jane Hayner, daughter of Mr. and Mrs. R. C. Hayner, of Minneapolis, to Dr. Adolph H. Ahrens, of Saint Paul. The wedding will take place early this month.

The name of Parkview sanatorium has been given to the former Hopewell hospital, Minneapolis. Announcement of the change in name was made by Dr. Walter E. List, superintendent of the Minneapolis general hospital, a short time ago.

Dr. F. N. Bjerken, formerly of St. Hilaire, is now associated with Dr. E. H. Smith, at Bemidji, in the practice of medicine. Dr. Bjerken recently returned from Chicago where he has been engaged in post graduate work for the past year.

Dr. Thomas Lowe, of Pipestone, who was recently reappointed to serve a term of three years on the State Board of Medical Examiners, has a record of seventeen years in service on the board. Dr. George B. Weiser and Dr. Ida McKen were also reappointed.

Dr. Virgil J. Schwartz, of Minneapolis, has returned from a six months' European tour where he visited the principal continental and English medical centers. Dr. Schwartz has opened his offices at 507 Physicians and Surgeons Bldg., for the practice of ophthalmology and otolaryngology.

Dr. Kenelm H. Digby, Dean and Professor of Medicine of the Hongkong Medical College, Hongkong, China and Dr. Oskar Frankl, Professor of Gynecology, University of Vienna gave Mayo Foundation lectures, May 10, 1923, to the staff and Fellows of the Mayo Foundation. Dr. Digby's subject was "The Functions of the Tonsils and Appendix." Dr. Frankl's subject was "The Relation of Cancer of the Stomach to the Female Sexual Organs."

At the annual meeting of the Minnesota Pathological

Society held in the Institute of Anatomy, University of Minnesota, Tuesday evening, May 15, 1923, the following officers were elected for the coming year: President, Dr. H. B. Sweetser, Minneapolis; vice-president, Dr. Paul Berisford, Saint Paul; secretary-treasurer, Dr. E. T. Bell, Minneapolis; councilor, Dr. E. L. Gardner, Minneapolis. Dr. Hal Downey, retiring president, addressed the assembly on "The Occurrence and Significance of the 'Myeloblast' Under Normal and Pathologic Conditions."

Two hundred and fifty physicians of the Tri-State District Medical Association recently completed a tour of the East for the purpose of visiting the clinics and hospitals throughout the eastern states. Physicians from Minnesota included the following: Drs. A. E. Booth, M. N. Leland, F. J. Pratt, F. C. Rodda, L. A. Nippert, Ivar Sivertsen, John O. Taft, Minneapolis; Drs. Herbert Bolstad, H. Buscher, S. G. Cobb, A. Christiansen, E. C. Eshelby, M. M. Ghent, O. J. Sohlberg, Paul H. Kelly, W. A. Dennis, C. L. Larsen, F. H. Neher, W. H. Von der Weyer, W. W. Lewis, C. H. Zander, Philemon Roy, H. T. Nippert, W. C. Rutherford, A. E. Comstock, Saint Paul; Drs. Henry W. Meyerding, D. F. Hallenbeck, L. W. Pollock, Verne C. Hunt, Rochester; and Dr. W. R. Humphrey, Stillwater.

NEW AND NON-OFFICIAL REMEDIES

During April the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

ABBOTT LABORATORIES:

Neutral Acriflavine-Abbott.

Tablets Neutral Acriflavine-Abbott, 0.03 gm. ($\frac{1}{2}$ gr.).

Enteric Coated Tablets Neutral Acriflavine-Abbott, 0.03 gm. ($\frac{1}{2}$ gr.).

HYNSON, WESCOTT & DUNNING:

Phenoltetrachlorophthalein-H. W. & D.

Ampules Phenoltetrachlorophthalein-H. W. & D.

MALLINCKRODT CHEMICAL WORKS:

Carbon Tetrachloride Medicinal-M. C. W.

MERCK & Co.:

Skiabaryt (for rectal use)-Merck.

Skiabaryt (for oral use)-Merck.

POWERS-WEIGHTMAN-ROSENGARTEN CO.:

Carbon Tetrachloride C. P.-P. W. R.

NON-PROPRIETARY ARTICLES:

Neutral Acriflavine.

Carbon Tetrachloride Medicinal.

NEW AND NON-OFFICIAL REMEDIES

Tincture No. 111 Digitalis-P. D. & Co.—A fat-free tincture of digitalis which, standardized by the minimum lethal dose frog heart method of Houghton, is 50 per cent stronger

than tincture of Digitalis-U. S. P. The actions and uses of Tincture No. 111 Digitalis-P. D. & Co. are the same as those of tincture of digitalis. It was introduced at a time when the "fat" of digitalis was believed to cause gastric disturbances. This claim of superiority is not tenable and the preparation is sold simply as a standardized tincture of digitalis. To minimize deterioration through light and air, the preparation is marketed in one-ounce amber vials and saturated with carbon dioxide. Parke, Davis & Co., Detroit, Mich. (Jour. A. M. A., April 7, 1923, p. 1003.)

Borcherdt's Malt, Cod Liver Oil and Iron Iodide.—Each 100 c.c. contains ferrous iodide 0.88 gm. (4 grains per fluid ounce), cod liver oil 25 c.c. and Borcherdt's malt extract (plain) 75 c.c. Borcherdt's Malt Extract Co., Chicago. (Jour. A. M. A., April 21, 1923, p. 1143.)

Carbon Tetrachloride Medicinal.—Carbon Tetrachloride has narcotic and anesthetic properties somewhat similar to those of chloroform. It has recently come into use as a vermifuge in the treatment of hookworm disease. It also removes some intestinal parasites other than the hookworm. It is reported that usually about 95 per cent of the hookworms are removed by the first dose. Its use appears to be relatively safe, but serious symptoms and even death have been reported. It is administered in water, milk or gelatin capsules on an empty stomach, followed by a purgative dose of magnesium sulphate.

The dose is from 2 c.c. to 3 c.c. (30 to 45 minims) for adults. Carbon tetrachloride is a heavy liquid, having an odor somewhat like that of chloroform. It is almost tasteless and almost insoluble in water.

Carbon Tetrachloride Medicinal-M. C. W.—A brand of Carbon Tetrachloride Medicinal-N. N. R. Mallinckrodt Chemical Works, St. Louis.

Carbon Tetrachloride C. P.-P. W. R.—A brand of Carbon Tetrachloride Medicinal-N. N. R. Powers-Weightman-Rosengarten Co., Philadelphia. (Jour. A. M. A., April 21, 1923, p. 1143.)

Modified Pneumococcus Vaccine.—A vaccine or "antigen" prepared by digesting a suspension of pneumococci, Types I, II, III and Group 4, at 37 C., until about 95 per cent of the organisms have become gram-negative and the mixture is relatively non-toxic to guinea pigs. It is believed that this method yields a vaccine with greater protective power. There is some evidence that this vaccine is of value in the treatment of lobar pneumonia. It is not intended for prophylactic use.

Pneumococcus Antigen-Lilly.—A modified pneumococcus vaccine-N. N. R. It is marketed in 5 c.c. vials, each c.c. containing twenty billion partially autolyzed pneumococci. Eli Lilly & Co., Indianapolis, Ind. (Jour. A. M. A., April 21, 1923, p. 1143.)

Sulpharsphenamine-Squibb.—A brand of sulpharsphenamine-N. N. R. (See Jour. A. M. A., March 31, 1923, p. 919.) It is supplied in ampules containing, respectively, 0.1 gm., 0.2 gm., 0.3 gm., 0.4 gm., 0.5 gm., and 0.6 gm. E. R. Squibb & Sons, New York City. (Jour. A. M. A., April 21, 1923, p. 1143.)

Neo-Silvol.—A compound of silver iodid with a soluble gelatin base containing 18 to 22 per cent of silver iodid in colloidal form. Neo-silvol, even in concentrated solutions, causes neither irritation of mucous membranes nor coagulation of albumin. It does not stain the skin. It is claimed that neo-silvol in laboratory tests for germicidal value has been found as effective as phenol in its action on bacteria. Neo-silvol is intended for the prophylaxis against, and treatment of, infections of accessible mucous membranes, and is claimed to be indicated in affections of the genito-urinary tract and of the eye, ear, nose and throat. Parke, Davis & Co., Detroit, Mich. (Jour. A. M. A., April 28, 1923, p. 1218.)

Phenoltetrachlorphthalein-H. W. & D.—A dibasic dye formed by the condensation of phenol and tetrachlorphthalic acid or its anhydride. Phenoltetrachlorphthalein has been used for the determination of the functional output of the liver. It can be used, in the form of the sodium salt, intravenously; but cannot be given subcutaneously or intramuscularly. The substance may also be obtained in the form of Ampules Phenoltetrachlorphthalein containing a solution of disodium phenoltetrachlorphthalein. Hynson, Wescott & Dunning, Baltimore, Md. (Jour. A. M. A., April 28, 1923, p. 1218.)

PROPAGANDA FOR REFORM

Ethylene as an Anesthetic.—The Council on Pharmacy and Chemistry has published a preliminary report on the experimental status of ethylene as an anesthetic. A. B. Luckhardt and J. B. Carter report that animal experiments with ethylene indicate that ethylene has a direct action on the nervous system when a concentration of 90 per cent is used; that the motor reflexes are abolished at this concentration, and that the phenomena produced by the undiluted gas are partly asphyxia, which factor can be removed by the addition of oxygen, when it is seen that narcosis results from the thylene itself. Trials carried out on human subjects appear to confirm the anesthetic value of ethylene. The investigators believe that ethylene will be found more desirable than nitrous oxid, but the experiments reported have been carried out on persons in normal health only. The Council reports that confirmation of the work is necessary before ethylene can be admitted to New and Non-official Remedies, but that further research with the gas is warranted. As a preliminary to such research, the Council cautions that the quality of the product must be determined. (Jour. A. M. A., April 7, 1923, p. 1003.)

Zonite.—Zonite is advertised as a new and wonderful discovery based on the "Carrel-Dakin" solution. The propaganda is, in effect, a capitalization of the work of Carrel-Dakin and others. Chemically Zonite, after dilution with an equal quantity of water, is claimed to be essentially the same as Surgical Solution of Chlorinated Soda (Carrel-Dakin) of New and Non-official Remedies.

Zonite has been exploited to both physicians and the public. (Jour. A. M. A., April 7, 1923, p. 1024.)

Owl Enamel Toilet Cream.—This preparation, manufactured by the Owl Drug Co. (Kansas City, Mo.), is sold for

the alleged purpose of "Beautifying the Complexion and Rendering the Skin Soft and Velvety." Dr. Henry W. Woltman of Rochester, Minn., has reported a case of lead poisoning in a woman who had been using Owl Enamel Cream. The A. M. A. Chemical Laboratory analyzed the product and found it to be composed essentially of lead carbonate, calcium carbonate and glycerin. The indiscriminate sale of a preparation of this sort is not merely a menace to the public health but a commentary on the laxity of our laws. It is notorious that certain salts of lead have for years been responsible for cases of chronic lead poisoning, due to their employment in cosmetics. In spite of this any concern, responsible or irresponsible, can sell for indiscriminate use a cosmetic loaded down with poisonous ingredients. (Jour. A. M. A., April 7, 1923, p. 1022.)

Alcohol and Disease.—Recently a statistical report regarding the possible influence of alcohol on the prognosis of pneumonia in a large municipal hospital has been published. The data for nearly 3,500 cases of lobar pneumonia showed that, with reference to the patient's habits of indulgence in alcoholic drinks, that the mortality was higher in moderate users than in light users or abstainers, and that the mortality is much higher in excessive users than in moderate users. It must be borne in mind, however, that these statistics have no bearing on the use of alcohol in therapy. (Jour. A. M. A., April 7, 1923, p. 1007.)

Incompatibility of Mercurochrome-220 Soluble with Local Anesthetics and Alkaloids.—An accident from the precipitation of mercurochrome-220 soluble by procain has been reported. The A. M. A. Chemical Laboratory has confirmed the incompatibility. The following local anesthetics were found to give precipitates when treated with mercurochrome-220 soluble solution: alypin, apothecin, benzocain, butyn, cocain hydrochlorid, Beaucain lactate, phenacain, procain, propaesin, quinin and urea hydrochlorid, tropacocain hydrochlorid and stovain. Many vegetable alkaloids were also found to be incompatible with mercurochrome-220 soluble. (Jour. A. M. A., April 14, 1923, p. 1091.)

A Rapidly Eliminated Digitalis Body.—At the request of the Council on Pharmacy and Chemistry, Dr. R. A. Hatcher undertook to elaborate a digitalis preparation that would be stable, that would contain a definite amount of the readily absorbable principle, and that would be suitable, if possible, for intravenous administration. As a result of his work he has isolated a digitalis body which behaves unlike any constituent of digitalis heretofore described. A nearly fatal dose is eliminated within a few hours after its introduction into a cat. It remains to demonstrate the therapeutic value of this new digitalis preparation through the co-operation of the clinician and the pharmacologist. The intravenous administration of digitalis is rarely necessary if digitalis is properly given by mouth. For rare cases in which intravenous medication administration is indicated, it appears that Dr. Hatcher has prepared a drug whose action is less persistent than other digitalis preparations now available, and which is simply and inexpensively prepared. (Jour. A. M. A., April 14, 1923, p. 1072.)

Glyco-Pepto Milk Not Admitted to N. N. R.—The Council on Pharmacy and Chemistry reports that Glyco-Pepto

Milk is a sour milk said to contain *Bacillus bulgaricus*, *Streptococcus lacticus* and *Glycobacter peptolyticus*. The preparation is marketed by the Glyco-Pepto Manufacturing Co., Long Island City, N. Y., with the claim that its administration, supplemented with a potato diet, through the presence of *Glycobacter peptolyticus* permits the implantation of the Bulgarian bacillus in the lower intestine and thus brings about an almost complete disappearance of phenols and indoxyl from the urine. The Council reports that Glyco-Pepto Milk may be a pleasing beverage and light food, but that there is no acceptable evidence for the many therapeutic claims that are made for it. The Council declared the preparation inadmissible to New and Non-official Remedies. (Jour. A. M. A., April 21, 1923, p. 1165.)

Nephritin (Reed and Carnrick) was reported on by the Council on Pharmacy and Chemistry in 1907. The following is a summary of this report: The advertising claims for Nephritin are based on the theory that certain granules in the renal cells, called "grains of segregation," and claimed to have been observed microscopically, carry on the secretion of urinary constituents and that a deficiency of them is the cause of nephritis. While Renaut, who formulated the theory, recommended as a cure for nephritis the maceration of fresh kidneys in physiologic sodium chlorid solution, Reed and Carnrick urged objection to the maceration and explained that nephritin represents all the action of the maceration, but is fifty times as potent. Nephritin is stated to be "the grains of segregation from the cortex of the pig's kidney, the renal connective tissue being eliminated." It appeared impossible that the microscopic structures claimed to be present in nephritin could be isolated as such from the connective tissues, and, on inquiry by the Council, no information on this point was to be had. Further, the firm presented no evidence for the claimed action of nephritin or for the claim that it was fifty times stronger than the maceration. (Jour. A. M. A., April 21, 1923, p. 1167.)

The Treatment of Syphilis.—The general view is that neither mercury or arsphenamin positively cures in cases in which the disease has existed long enough to become well established as a systemic disease, but that they both tend to cure and that both are valuable in treatment. It is the general opinion of syphilologists that when chancres are seen that are unmistakable, these cases should be vigorously treated and that there is a good chance of aborting the disease at this time. If early cases are not treated until the Wassermann reaction has become positive, there is a difference of opinion as to treatment. There are syphilologists who believe that these early cases are better treated by mercury alone until the patient has had an opportunity to develop all the immunity of which he is capable. After the patient has established all the resistance of which he is capable, these syphilologists would treat with mercury and arsphenamin. It is becoming increasingly apparent that the advantages of the new method of treating syphilis, in which arsphenamin plays the larger part, are by no means certain. The trend of the last few years has been in the direction of placing more reliance on mercury and the older methods in the treatment of syphilis. (Jour. A. M. A., April 21, 1923, p. 1167.)

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of April 11, 1923

DR. H. LONGSTREET TAYLOR, Presiding

DR. A. R. HALL reported a case of a long remission in pernicious anemia.

Mr. C. T. S. was seen by me in the early part of 1909. He showed a marked anemia with red cells, at one time as low as 700,000 and a hemoglobin of 20 per cent. There was marked variation in the shape of the cells, in the size of the cells, and in their staining properties. He had a total absence of free hydrochloric acid but his nervous system was apparently normal. He was ill, in all, for about eleven months, but gradually improved and then appeared to be quite well until the latter part of November, 1921. During this time, in August, 1917, he again came to me and his blood was apparently normal.

He came under the care of Dr. W. R. McCarthy in November, 1921, at which time he complained of being very sensitive to cold and of numbness in his hands and feet. His blood was examined and the red cells found to be 2,560,000 and the hemoglobin 49 per cent, but later the count was 3,180,000 with a hemoglobin of 69 per cent. There was at this time nothing in the red cells suggestive of primary anemia, but later they dropped as low as 810,000 with a hemoglobin of 18 per cent and white cells 1,600 in number. There was also a marked variation in the size and shape of the red cells and of their staining properties, and both normoblasts and megaloblasts were present. He had from time to time disturbances of digestion, but his gastric contents were not examined. He continued to have numbness in his hands and feet and there was great diminution of the vibration sense in both feet and a loss of sense of position.

I saw him with Dr. McCarthy in March, 1923. There appeared then to be no doubt that he had pernicious anemia. He died on April 8, 1923.

The autopsy, as performed by Dr. Warwick on April 9, 1923, showed a well-developed, fairly well-nourished body. The muscle was unusually bright red in color and the subcutaneous fat, which was small in amount, was a very distinct bright yellow in color. The organs of the chest appeared entirely normal except for a slight hypostatic congestion in the lower lobes of both lungs. The spleen was about twice the normal size and showed a small amount of lymphoid hyperplasia and marked congestion. The liver was also definitely enlarged and very pale in color and greasy upon the cut surface. The microscopic section showed a very large amount of fat, arranged in a diffuse manner throughout. The stomach was very small in size, evidently due to a contraction of the wall, which appeared normal upon microscopic section. The kidneys and bladder and intestines appeared entirely normal. The bone marrow of the femur was a bright red in color and very soft in consistency. The spinal cord was not examined.

I think there is no doubt that this man died of pernicious

anemia and I feel that the anemia of 1909 was also a pernicious anemia; this would make a remission of 12 years.

I wish to thank Dr. McCarthy for permission to report this case.

DISCUSSION

DR. HAMMES: I had an opportunity to observe this case over a period of a year. As I recall, he had definite neurological findings in 1909, manifesting themselves mainly in definite subjective disturbances—numbness in the hands and feet, etc. There was marked improvement not only in his blood picture but also in these neurological symptoms which disappeared entirely. When he had a recurrence of his trouble thirteen years later, his first symptoms were neurologic, sensory disturbances, slight bladder involvement and slight reflex changes, while the red count was normal and the hemoglobin was 80 per cent. As his spinal cord picture became more pronounced, his blood picture gradually took on the characteristics of a pernicious anemia.

DR. HALL: I think Dr. Hammes took the spinal fluid for examination.

DR. HAMMES: The spinal fluid was negative in every way.

DR. E. M. HAMMES reported on the Nonne-Froin spinal fluid syndrome and showed a specimen of spinal fluid.

The specimen which I have to present is a spinal fluid taken from a patient seen in consultation with Dr. Lerche. The patient presented atypical symptoms of a spinal cord tumor suggestive of a cauda equina localization. The color of this spinal fluid was decidedly yellowish and there was spontaneous coagulation. This coagulum developed within less than two minutes after the lumbar puncture. There was an excessive globulin; six lymphocytes; a negative Wassermann, and a colloidal gold curve 1112332200. The pressure of the spinal fluid was so low that it took us six minutes to obtain 4 c.c. I wanted to perform a cisterna puncture in order to have an opportunity to compare the fluid higher up, but we were not permitted to do so. In all probability the fluid would have been normal in every respect.

This syndrome of xanthochromia, with or without a high cell count and with or without spontaneous coagulation, is referred to as a Nonne-Froin syndrome and it simply signifies that the lower portion of the spinal canal has been occluded so as to form a cul-de-sac. One frequently sees this in spinal cord tumors. I recall one patient where this was present in a case of transverse myelitis secondary to Pott's disease.

DISCUSSION

DR. RIGGS: Twenty years ago Froin reported a number of cases in which there was pressure upon the spinal cord, chiefly due to meningitis. He described the syndrome, a specimen of which Dr. Hammes has just shown us.

Thirteen years ago, Nonne described certain cases of pressure on the spinal cord where they did not have any change in color of the spinal fluid, no clotting, no increase in cells, but only a moderate or marked increase in the protein exudate.

Seven years ago, Drs. Ayer and Viets went all over this subject, having in view this work of Froin, as well as that of Nonne, and their conclusions were that the syndromes of Froin and Nonne are characteristic of spinal cord com-

pression. That of Froin is indicative of a marked or rapidly progressive compression; that of Nonne suggests a lesser degree of pressure and is so delicate a test that in cases where cord pressure is in doubt it may be regarded as the most significant obtainable symptom.

DR. FARR: Dr. Riggs referred to the work of Dr. Ayer of Boston. I thought it might be interesting to report some of the recent work he has done in this line—what he calls the "two-needle method," introducing a needle above and one below the suspected point of the lesion. There are definite results in case the fluid above does not mix with that below. These are shown by the pulsation wave as demonstrated by the fluid spurting out, the difference in the rate of flow. I saw Dr. Ayer demonstrate this in a patient and also on a manikin he devised for that purpose. In their hands it has worked out as one of the most perfect methods of locating lesions which entirely cut off the circulation of the spinal fluid in the canal or greatly reduce it.

DR. HAMMES, in closing: The Nonne-Froin syndrome in this patient is of particular interest because the patient presents no evidence of a transverse myelitis. The only symptoms present are some atrophy of the right quadriceps muscles and neuralgic pains in the right anterior crural nerve. Dr. Lerche will probably operate this patient within a few days for a tumor of the cauda equina.

DR. A. E. BENJAMIN reported a case of carcinoma of the pyloric end of the stomach and diverticula of the jejunum.

Mrs. F. S., age 63 years, housewife. Family history negative. Personal history: married 30 years. Three children. Menopause at 45 years. Asthma for last five or six years until last November. Otherwise in fairly good health until last fall.

Present Illness: After asthma disappeared she began having pain in the gastric area, nausea and vomiting. Pain came on about one hour after eating. Symptoms gradually became worse and patient was unable to take any foods without vomiting, for three or four weeks. Bowels were very loose at times. Considerable swelling of both limbs. Patient emaciated and weak.

Physical examination disclosed a movable mass at the pyloric end of the stomach about the size of a small orange.

Laboratory findings: Temperature, 98; pulse, 84; hgb., 80; blood-pressure, 94/60. Urine—orange, clear, acid, 1036; alb., 0; sugar, 0.

X-ray showed annular constriction at the pylorus, probably carcinoma.

Operation: Local anesthetic, median incision. About 20 ounces of free fluid in the abdominal cavity. Three diverticula of the jejunum were found about one-half the size of the lumen of the gut, 12 to 20 inches from the duodenum. The mass involved the pylorus and one-fourth of the pyloric end of the stomach. Many of the mesentery glands were enlarged. A posterior gastroenterostomy seemed impractical in this case and to relieve the incessant vomiting, an anterior gastroenterostomy was performed.

Comment: The patient did well for three days, but lavage had to be performed at the end of the third day. Patient gradually became weaker, the bowels being loose for three days. She died suddenly on the fifth day after operation. A post-mortem was not obtained in this case, but being in a very weakened condition, she probably died from

exhaustion. There was no apparent peritonitis or distention of the abdomen. The interesting points in connection with this case are:

1. The diverticula of the jejunum.
2. The rapidity of the development of the growth and the symptoms.
3. The unusually good laboratory findings.
4. The unexpected and rapid termination of the case.

DISCUSSION

DR. SCHWYZER: Sometimes these operations on the stomach will run a course like that. When I heard this report I remembered a case where we made a sub-total excision of the stomach. We had gone up to the diaphragm, which left only a little bit of stomach that we could make a gastroenterostomy on. That is very risky. In Dr. Benjamin's case there was no marked interference with the circulation of the stomach. The case of mine did well for a week, was happy, had a pretty good pulse and normal temperature. At the end of about seven days the pulse rapidly went up and he died. We made an autopsy. When you have to go beyond the gastric artery and then do much suturing you are liable to have a necrosis following. At autopsy there was no recognizable peritonitis, no fluid in the abdomen, but there was necrosis of the anterior wall of the stomach. There may be marked pathology without many outward symptoms.

DR. FARR: About three years ago I did an extensive gastrectomy and I turned back a flap of the ribs in order to reach the cardiac end of the stomach. I ligated the gastric artery. That patient went through a perfectly normal convalescence until the 9th day. Pulse became rapid. Patient became weak and died two days after the onset of these symptoms.

Autopsy showed a necrotic mass about the size of a dollar with a small leak in it.

DR. BENJAMIN, in closing: I am very glad to have this explanation given. I recall another case I operated about fifteen years ago, where the same thing happened apparently. I was not able to obtain an autopsy. In that case necrosis might have occurred, but in this case it did not seem to be so. Gastroenterostomy now seems to be a rather simple procedure and good results are usually obtained.

DR. R. E. FARR gave a supplementary report on the case of removal of larynx (reported at March meeting).

I would like to add a supplementary report on the pathological examination of the case of the larynx that I reported at our last meeting.

The microscopic report furnished by Dr. Bell shows that the ulcer was not malignant, was not luetic, and not tuberculous; therefore, only chronic inflammation.

This brings up the important question of what should have been done in the case. There is not a great deal written about it. Going back, the question of resecting the larynx without frozen section must be considered. The larynx was involved to a little over one-half its surface—an area about as large as a dollar and 1 cm. deep. Had frozen sections been made of such a case while the patient was on the table, and had shown no malignancy, should one close the larynx and leave it alone? If not, should one cauterize it, and let it go? This man had had the trouble for three years. The fact that frozen sections show no

malignancy and serial sections later show malignancy had to be considered. Less than one-third of the circumference of the larynx would remain after resection. If one removed three-fourths of the larynx the patient could not get along because the larynx would not remain patulous. As nearly as I can see from the literature, I cannot change my opinion as to what should have been done in this case.

DR. C. EUGENE RIGGS read a paper entitled "The Disappearance of Headache and the Hemi-Parkinson Syndrome in a case of Encephalitis Lethargica following the Intravenous Injection of Sodium Iodide."

DISCUSSION

DR. HAMMES: Dr. Riggs is to be congratulated not only on having so clearly pointed out the many phases of this most interesting subject but especially because of having stressed the importance of sodium iodide intravenously in this condition. In our work, we have tried every form of treatment that has been commended in the literature excepting Rosenow's serum, and have secured better results from the intravenous use of sodium iodide after the subsidence of the acute stage than in any other form of therapy.

The causative factor in this condition is still in doubt, although some workers (Loewe and Straus and others) have discovered a filtrable organism which has a definite effect when introduced into rabbits, producing somewhat atypical symptoms of encephalitis. This organism closely resembles Flexner's streptodiplococcus, which he found in poliomyelitis. However, it differs from Flexner's organism in that it is more virulent to rabbits and much less virulent to monkeys and the immunizing serum against Flexner's poliomyelitis organism has no protective influence over the organism reported in encephalitis cases.

DR. CROSS: Dr. Riggs has impressed us authoritatively with the seriousness of the epidemic we are now experiencing. His paper is a very timely contribution to what seems like a maze to most of us.

If it is fair to ask, I would like to know what led to the employment of sodium iodide in the treatment of encephalitis. Has it been used to mitigate the pain only, or has it been found of value in shortening the disease?

We are all wondering at present whether there is any time when one may consider that the patient is out of danger. Many patients who have had undoubted encephalitis apparently convalesce, and are anxious to take up activity. Under what conditions is it safe to allow the patient to exercise, or how long—if it has been determined—should a patient remain at rest after the attack, until the danger of a development of later trouble is past? We have all noticed that the period of prostration or lack of endurance is a very variable one in different patients.

DR. FARR: Looking at this subject from the standpoint of one who knows very little about neurology and still sees these patients, I think I might call attention to some surgical phases of this disease which have threatened in a number of instances to get me into trouble.

Something over a year ago I received a wire from a doctor at Brainerd saying he was bringing a patient in with acute intestinal obstruction. This man came in with a greatly distended abdomen, terrific pain, bowels had not acted for three days, but he lacked abdominal rigidity. A

routine examination failed to bear out a diagnosis of intestinal obstruction but brought out some mental symptoms. I asked Dr. Gardner and Dr. Hamilton to see him. He shortly developed acute mania, became lethargic, and finally recovered.

Within the last few months Dr. LaPierre sent a case to the hospital as one of intestinal obstruction. Again I hesitated because the abdominal symptoms were not complete, and in making a neurological examination I was impressed with the fact that his mentality was off. I hesitated long enough to have a spinal puncture and other investigations made and Dr. Hamilton saw this case, too. We waited two or three days so that we could get all the laboratory data for him, and this case turned out to be lethargic encephalitis.

I operated on a woman for sub-acute appendicitis. She was very hysterical and still she seemed to be definitely an operative case. She had a large, thickened, reddened appendix, and I felt that we were all right. She went home two weeks ago and within the last two days developed foot-drop and other things which rather took the wind out of my sails.

We have about reached the conclusion that all suspicious cases that come in to us, that is, all cases that are not definitely things that we can nail down as entities, we call encephalitis until they are proven otherwise.

DR. RIGGS, in closing: Souques' conception of paralysis agitans was very illuminating to me. It was original and certainly very modern. According to this you have in the region of the substantia nigra irritation of a variety of kinds. It is a syndrome, not a disease. Then came the findings of Goldstein, Foix, and McKinley and others who investigated these encephalitic cases with the Parkinson syndrome. Foix found in this region "active inflammatory processes." It was that that suggested to me the use of the iodide of sodium. I don't know how to answer your question better than to say that it was the supposed alternative property of iodide and its solvent effect on sub-acute inflammatory processes that prompted me to use it.

I also want to emphasize here that if Souques is correct, and that if encephalitis with its lesions in this area has helped us to arrive at a definite idea of what essential paralysis agitans is, it has accomplished much. In my own mind, I decided that whenever I got a clear-cut case of paralysis agitans I was going to try the administration of sodium iodide.

I don't know how better to express my feeling with regard to the uncertainty of recovery from encephalitis than I did in my closing sentence: "A seeming-convalescence may only be an illusion of hope; an apparent recovery a fool's paradise." We have a latent chronic infection resembling the "para" stage of syphilis. How long that will remain in the system without some sudden outbreak, as so often occurs, no one knows.

I was greatly interested in Dr. Farr's remarks and I think that his observations are a real contribution to the subject. It confirms my statement that it is a masquerader like hysteria; it simulates everything and anything in the way of morbid manifestations.

I might say that we have been using a preparation put up by Upjohn in ampules, 31 grains of sodium iodide to

the ampule and all ready to use. I think the preparations are made by three good pharmaceutical firms. The frequency of use simply depends upon the reaction you get. We use it from one to three times a week, according to indications.

It seems to me, gentlemen, that it is a real advance in therapy. It does relieve headache, and that is something.

DR. NOOTNAGEL: Do you perform the spinal puncture at the same time?

DR. RIGGS: It does not always give headache, but if it does, we do so. Dr. Hammes had one case in which there occurred severe headache; a lumbar puncture about 8 hours afterwards gave immediate relief.

DR. BENJAMIN: How much do you withdraw?

DR. HAMMES: As much as you comfortably can.

DR. CROSS: Do I understand that the findings which led you to use sodium iodide was in paralysis agitans and not encephalitis?

DR. RIGGS: It was in the Parkinsonian syndrome of encephalitis.

DR. HAMMES: Every brain that has been examined has shown definite changes. The peripheral nerves show definite degeneration.

DR. RIGGS: One question that I think was suggested by Dr. Cross; as to the time of the use of the iodide. We have used it only in the chronic stages of the disease; never in the acute stage. I can't help but feel that there is a real indication for the use of the hypertonic salt solution in the acute stage.

DR. CARLAW: Are your initial dose and the other doses of the same size?

DR. RIGGS: All the same size.

DR. HAMMES: I suppose one could use it in increasing doses, but we have not done so.

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

Stated Meeting Held October 5, 1922

THE PRESIDENT, DR. ROSCOE B. WEBB, in the Chair

OPERATIVE FINDINGS IN AN INGUINAL HERNIA PREVIOUSLY INJECTED WITH PARAFFIN

DR. KENNETH BULKLEY presented an adult male, aged 50, who was admitted to the Northwestern Hospital on March 11, 1922, with the following history:

About six years ago this man developed a left inguinal hernia. Four years ago he consulted an Institute in Des Moines which specializes in the paraffin injection treatment of hernias. This man stated that he went into this office, the skin of the inguinal region was anesthetized and then with a large syringe and a needle about four inches in length, approximately four ounces of hot paraffin was injected and manipulated into place by the operator. He remained in the office for a period of about an hour, following which he went home. About two months ago this patient had a right inguinal hernia treated in a similar manner. Four days before his admission to the hospital a mass appeared in the left groin which was painful and

which the patient was unable to reduce. His bowels moved on the day of his admission to the hospital following the taking of a cathartic. He has had no urinary symptoms. He has been nauseated for two days, but has not vomited.

Examination showed in the left inguinal region a mass extending the length of the canal, but not protruding through the external ring. This mass was dull to percussion, tender, could not be reduced and presented the typical appearance of a strangulated epiplocele. No hernia could be detected on the right side.

Under gas-ether anesthesia, under the impression that a strangulated inguinal hernia was being operated upon, an oblique incision was made and there was encountered almost immediately a mass of semi-solid paraffin bathed in a rather thick, odorless pus. The surrounding structures were hard and indurated so that the anatomy of the region could not be determined. This abscess cavity contained large quantities of semi-solid paraffin and pus extending directly posterior over the body of the pubis and down into the true pelvis to a depth of four inches. No hernia at any time was detected nor was any sought. A rubber drainage tube was placed to the deepest portion of the wound and the wound partially closed.

This man made a normal convalescence without complications, his temperature promptly dropping to normal and there remaining. For a period, however, of nearly three months this man extruded from his wound small bits of paraffin. For the past six weeks his wound has been healed. He is presented tonight as an instance of a double, inguinal hernia apparently cured by paraffin injection. At the present time no hernia can be detected in either inguinal region.

DR. JAMES M. HAYES said he had seen about six or eight cases of inguinal hernia which had had paraffin injections, but this was the first case which he had seen in which a cure had been effected. Two cases who claimed to have been injected had no signs of paraffin remaining at the time of operation, while a third presented a well circumscribed mass, presenting much the same appearance as that of a "paraffinola." The remaining cases he did not see go to operation, but externally could not say that the injection produced any change.

DR. ROSCOE B. WEBB recalled a patient who had a large right inguinal hernia who was treated sometime after in a neighboring state. Examination later revealed no evidence of hernia. There was a large mass of paraffin about one and one-half inches in diameter just within the external ring. No recurrence as yet.

Stated Meeting Held December 7, 1922
THE PRESIDENT, DR. R. C. WEBB, in the Chair

DR. GEORGE R. DUNN read a paper on The Obliteration of Bone Cavities in Chronic Osteomyelitis by Free Fat Transplantation. (See page 379.)

ACUTE INTESTINAL OBSTRUCTION AND RUPTURED APPENDIX FROM ADHESIONS

DR. ARCHA E. WILCOX presented a schoolboy, aged 12, who was admitted to the General Hospital on September 16, 1922, with the following history:

Eight days previous patient noticed pain in the abdomen in the region of the umbilicus, which came on suddenly at 9 P. M. Next day he felt feverish, had continued pain around umbilicus and was nauseated. That evening he vomited three times. Next day the patient had diarrhea, with bowel movements about every hour. Pain persisted about umbilicus, but would let up at times and be severe at other times. Patient seemed to have pain every few minutes, which would cause him to cry out. Vomiting occurred several times. Next day patient still had pain about umbilicus, diarrhea was more severe and no food was taken. For the next three days condition was the same, when pain shifted to left lower quadrant, but continued to come on every few minutes. No bowel movements except by enema. Stools have been green and watery, no blood. Patient has eaten practically no food for past week, but has been getting medicine by mouth, which stopped diarrhea. Was given injection in arm two days ago, but pain was not relieved. No history of any previous attacks of abdominal pain. Patient has vomited occasionally at times in past associated with eating of food which did not agree. Never sick at these times.

Past History: Child has been in good health all his life.

Examination: Fairly well developed and nourished boy. Has somewhat anxious facial expression and complains of pain in left side of abdomen. Slight desquamation present over forehead. Pupils equal and regular, and react to light. Head, eyes, ears, nose, mouth and throat negative. Chest and lungs negative. Lung border pushed up by tympanitic abdomen. Heart negative.

Slight distention of abdomen present. Slight discoloration present about umbilicus. Some tenderness of whole abdomen, more markedly tender over an area on left side about two inches to left of umbilicus. Slight rigidity present. Tympanitic note throughout chiefly over upper portion. Liver dullness partially obliterated. Tympanitic note high up on left side anteriorly.

Rectal examination showed some tenderness, no mass, and no localized palpable tender point.

Sept. 16, 1922: 11:30 P. M. Patient admitted to hospital with pain in abdomen, more on left side. Leucocytes 13,500 (86 per cent polymorphonuclears, 14 per cent lymphocytes). Abdomen considerably distended. Patient having pains which come on every few minutes, causing patient to cry out. Slight muscle spasm and rigidity over left upper abdomen. Tenderness on palpation over entire abdomen, more marked on left side. Patient has normal temperature. Pulse 104. Noble's enema given. Considerable amount of greenish black liquid excreted. Morph. sulph. gr. 1/12 given for relief of pain.

Sept. 17, 1922: Whole abdomen tympanitic. Tenderness on left side of abdomen. Enema relieved distention. Somewhat greenish brown material passed. Pain practically gone. Passed one bloody stool, moderate in quantity.

Operation, Sept. 18, 1922: Local and gas anesthesia. Lower mid-line incision. Bowels found adherent to parietal peritoneum. One loop of small bowel found collapsed, but it filled easily from either end on manipulation. A ruptured appendix found. Appendix removed. Pus had ruptured through the mesentery and was exuding on the left side of spine. As much of the pus as possible was sponged

out. Two large cigarette drains were inserted, one in the region of the appendix and the other on the left side of the spine, where pus was exuding. The wound was closed with plain catgut and three through-and-through silk-worms. Dermal used in skin.

Patient given 400 c.c. saline intravenously and 1000 c.c. by hypodermoclysis immediately. Enteroclysis started. Morphine p.r.n.

Sept. 19, 1922: Patient had fairly comfortable night. Pulse up, but of good quality. Dressings changed soaked with sanguino-purulent discharge.

Sept. 20, 1922: Patient fairly comfortable. Given hypodermic in night. Pulse still elevated, 130. Some distention present, partially relieved by modified Noble's enema.

The patient continued to remain about the same, having considerable gas pains, until October 27, 1922, when the pain disappeared, abdominal distention occurred, patient became anxious, vomiting occurred and a diagnosis of obstruction was made.

Oct. 28, 1922: Still much pain. Enema only slightly effectual. Stomach washed out.

Operation, Oct. 29, 1922: Abdomen opened through left rectus muscle. Numerous adhesions were seen in left upper quadrant caused by previous operation. These adhesions were evidently plastic, fibrous affairs and showed some evidence of hemorrhaging in the adhesions. All that could be found were freed and the collapsed bowel was easily inflated. There was one portion of the ileum that appeared to be approaching the gangrenous state, but upon freeing the adhesions the color came back sufficiently to warrant leaving it alone. The adhesions around the appendix operative field were not disturbed. Abdomen closed without drainage. Stomach washed out and 2 ounces of castor oil were passed into the stomach through tube. Wound closed with chromic catgut and reinforced with chromic.

Following the second operation convalescence was extremely stormy. There was a great amount of discharge from the abdominal wound and sloughing away of nearly all the rectus muscle, but when granulation did develop it was remarkable how the abdominal wall healed, and upon patient's discharge in January, 1923, no abdominal distress was present, functions were normal and there had been considerable gain in weight.

RUPTURED KIDNEY

DR. FREDERICK H. POPPE then presented a child, female, aged 11, who fell September last, tripping over a boy's foot and striking her left lumbar region on the edge of the house steps. She immediately fell to the ground complaining of severe pain in the left lumbar and hip regions, telling her mother that she felt "terribly bad." She was carried into the house still complaining of pain. One-half hour later she vomited and was pale, her skin was moist, her pulse rapid, her respiration shallow and she still complained of pain.

Examination revealed slight rigidity of muscles over the left hypochondriac region, only elicited by deep palpation, and marked muscular spasm over the lumbar region posteriorly. There was no tenderness in the region of the left hip. Patient had not urinated for several hours so was asked to void. She voided 6-7 ounces of bloody urine.

From the bloody urine, shock, localized areas of tenderness and type of accident, a diagnosis of a ruptured kidney was made. Immediate exploration was advised.

Exploration through an oblique incision in the lumbar region revealed a kidney with lower pole (lower third) amputated except for capsular hinge near hilum and marked bleeding from both surfaces. It was decided that the easiest and most efficient way to control the hemorrhage would be to stitch amputated portion back in original position. This was done with four mattress sutures of fine catgut and the wound closed with drainage.

Subsequent events confirmed the diagnosis. Twelve hours after operation centrifuged urine was negative for blood, and drainage was also nil. Drains removed in 3 days. Patient made an uneventful and complete recovery.

The mechanics of this particular injury seemed to be the 12th rib swinging forward as a scythe, fulcrum at spine, amputating projecting portion of kidney.

Dr. Poppe stated it was interesting to note that Delbet and Watson, in a report of these cases, found that two-thirds recovered without operation; where it was necessary to perform a nephrectomy, three-fourths recovered; and only 5 per cent of these cases died following exploratory operation. In other words, out of two series of 225 and 273, 45 per cent and 30 per cent, respectively, died without operation, but out of two series of 50 and 99, only 4 per cent and 7 per cent, respectively, died after exploratory operation. Needless to say, in children the worst cases were usually encountered and the highest mortality rate ensued.

It behooves us, once the diagnosis is made, to immediately explore and undo damage wrought as efficiently as we are able.

The paper of the evening entitled Meckel's Diverticulum as an Etiological Factor in Intestinal Obstruction was presented by DR. JAMES A. JOHNSON, Minneapolis.

DISCUSSION

DR. JAMES M. HAYES: I want to congratulate Dr. Johnson on his complete and excellent discussion of Meckel's diverticulum as a cause of intestinal obstruction. Very little remains to be said on this phase of obstruction. The prime factor, of course, in every intestinal obstruction is to make a diagnosis of obstruction. The more readily it is made, the greater are the patient's chances. Frequently a mass can be palpated which gives us quite a definite clue to the location of the obstruction. There are some other features which might aid us in determining the form and location of the obstruction.

Because of the presence of the pancreatic and duodenal ferments in the upper small intestine, an obstruction here is more rapidly fatal than in the lower small intestine. The period in which we may obtain surgical relief from obstruction in the large intestine is greater than that when the obstruction is in the small intestine.

The average age at which Meckel's diverticulum produces obstruction, as Dr. Johnson has stated, is about twenty-one years. Usually obstruction in the large intestine comes on at a more advanced age, usually in the cancer age.

Tetany may accompany an obstruction in the duodenum or upper jejunum. The vomitus is usually watery at first and later has the appearance of bile, with little odor. In

the lower small intestine the vomitus soon takes on a fecal character with very foul odor.

DR. ARTHUR F. BRATRUD: The subject of intestinal obstruction is always a most timely one because of the great difficulty in making a diagnosis when these cases are first seen and the high mortality rate present even after diagnosis is made. Dr. Johnson has covered the field so thoroughly from the embryological point of view and the various methods by which an obstruction could be caused that nothing more could be said.

It is doubtful whether a diagnosis of Meckel's diverticulum is ever made pre-operatively, yet, where a strangulation or obstruction is suspected, the most important diagnostic symptom is severe, colicky pain with frequently running paroxysms, non-localized, associated with nausea and vomiting. As a rule there is absence of stools and absence of tenderness and rigidity. A point which may be of value in diagnosis is history in regard to discharge from the umbilicus, which may vary from a serous to a purulent discharge. Even though a provisional diagnosis of intestinal obstruction is made, I do believe it is of value to give a liberal dose of charcoal, for if charcoal is recovered in the stools, we know there is not a complete obstruction. While as a rule a diverticulum of the small intestine gives no discomfort, because of the free exit of the contents, yet there are cases which do produce symptoms simulating attacks of appendicitis as well as attacks of gallstones (as illustrated by a case reported by Dean Lewis). The possibility that a diverticulum may cause trouble depends on several factors. First, they often tend to enlarge from the pressure within. Also, they tend to harbor fecal and other harmful contents, and probably most important is the fact that they undergo various secondary pathologic changes, amongst which may be mentioned: infection, adhesions, perforation as sometimes occurs in a hernial sac, chronic proliferative inflammation with subsequent thickening of the intestinal wall and stenosis of the bowel, and the conditions stated by the essayist.

I believe that every case operated on for any abdominal condition should be examined for Meckel's diverticulum. It requires but little time and vague abdominal conditions may be cleared up by proper care of this pathological condition.

The question of anesthesia in this condition is important. In every obstruction it is the absorption of toxic material above the point of obstruction that causes death. Either local or spinal anesthesia should be used if possible. Of these two, spinal is best, for with it there is a paralysis of the plexuses of Auerbach and Meissner which control the inhibitory fibers of peristalsis. As a result, there is evacuation and emptying of the bowel of the toxic material oftentimes before the operation is completed.

DR. FREDERICK OLSON: The essayist has to my knowledge been interested in this subject for several years. A large amount of information has been boiled down into a concise presentation. Dr. Johnson and the Society are to be congratulated on the paper. Reiteration and accentuation of any point making for better diagnosis in the "acute abdomen" cannot be too highly commended.

DR. O. W. YOERG: I think Dr. Johnson's paper is of unusual interest. I believe very few surgeons have had the

opportunity of operating three cases of this type of obstruction. No doubt this cause of obstruction is occasionally overlooked. Dr. Johnson is to be congratulated in his early diagnosis and successful handling of these cases.

DR. JOHNSON (closing): I am very pleased to have had so many members discuss my paper. It has been a very interesting subject to me while I have been working on it, especially to find that there are such a great number of intestinal obstructions that are overlooked which are due to Meckel's diverticulum. They may develop into a stage where operation is of very little avail; in other words, terminal cases of intestinal obstruction, which of course accounts for the very high mortality reported.

In this connection, I wish to speak of Case 3, the little child who died from intussusception. Every effort was made to rule out intussusception and it was thought that this had been done. I feel now that in the event I have the same type of case present itself to me, I would have no hesitancy in giving such a child a small amount of anesthesia, enough to relax the abdomen so that I could definitely rule out any intussusception. I have never done this, but I am quite certain that next time I shall resort to this particular measure. Perhaps even that will not rule out the early cases, but I believe it may be an additional diagnostic feature.

PROGRESS

Abstracts to be submitted to Section Supervisors.

SURGERY

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DOUBLE KIDNEY—Daniel N. Eisendrath (Ann. of Surg., April, 1923): There is much confusion in nomenclature of renal anomalies.

In cases in which both kidneys are on the same side crossed ectopia is the best term to use and the lower kidney is the one which is ectopic. The partial fusion or complete fusion in crossed ectopia is the result of a displacement of one kidney during embryonic life.

Where a regular kidney has formed over the cranial ends of two ureters which arise from the same ureteral bud, the condition is best referred to as double kidney.

Horseshoe kidney exists in variable degree from cases in which they are connected by a narrow band of fibrous tissue to cases in which there is a single mass with no apparent division or constriction. The two halves never lie on the same side of the spine.

Supernumerary kidney means a third complete kidney with no connection with either of the other two kidneys. This is a very rare condition.

Young, Davis, nor the author could find a case of two ureters with one renal pelvis. There is no recorded case in

which there was a reduplication of the ureters and a union at some higher point so as to end in a single pelvis.

The frequency of double kidney and likewise reduplication of pelves and ureters averages between 3 and 4 per cent.

From large reported series of cases there were 619 reduplications of ureters and renal pelves.

1. Condition found on one side in 80 per cent (502 cases).

Condition found on both sides in 20 per cent.

2. Of the unilateral cases the reduplication was complete in 156 (50 per cent).

Of the unilateral cases the reduplication was incomplete in 346 (70 per cent).

3. Of the bilateral cases there was complete reduplication in 80 per cent.

Of the bilateral cases there was incomplete reduplication in 20 per cent.

From the clinical and pathological standpoint, we are interested in many features of reduplication of the renal pelvis and ureter. For the sake of simplicity one may divide these into those relating to the kidney itself and into those relating to the ureter.

A. Kidney

1. Different degree of separation of two halves.
2. Relative size of two halves.
3. Association with other renal anomalies.

Double kidney usually lies a little lower than normal.

B. Ureter

1. Relation of the two ureters to each other at upper end and to the renal pelvis (important from surgical standpoint).
2. Level of union, mode of crossing and of normal ending of ureters. In the bladder the lower and mesial orifice always belong to the ureter from the upper half of the kidney.

C. Ectopic or abnormal mode of ending of ureters

1. Open endings into male genito-urinary tract
 - (a) Into bladder (usually near neck)
 - (b) Into urethra
 - (c) Into seminal vesicle, ejaculatory duct and vas deferens
2. Open endings into female genito-urinary tract
 - (a) Into urethra
 - (b) Into vagina
 - (c) Into vestibulum vaginæ
 - (d) Into persisting duct of Gärtner
3. Blind openings
 - (a) Into muscular layer of bladder
 - (b) Into submucous layer of posterior wall of floor of bladder
 - (c) Into cystic dilatation
 - (d) Into submucous tissue of vagina or vestibule.

(May be cause of incontinence in females)

D. Associated defects of the male and female genitalia.

W. P. HERBST.

SLIDING HERNIAS OF THE CECUM AND APPENDIX IN CHILDREN—Vernon C. David (Ann. of Surg., April, 1923): Real sliding hernias are rarely seen in chil-

dren. Coley, in 2,200 hernias, found cecum alone in sac in 18, appendix alone in 10, and cecum and appendix together in 7. Judd, in 1,652 hernias, found 14 of the sliding type, 6 of which were of the cecum on the right side. Hilgenreiner reports 22 hernias of the cecum in 2,238 hernias operated on, 8 of which were sliding. Hildebrand in 1892 collected 128 cases of hernia of the cecum, of which 80 were right inguinal, 18 left inguinal, and 11 right femoral. In 16 instances cecum was present in the right inguinal hernia in children. Of these, 2 were in the fetus at the eighth month, 2 in children over 9 years, and 12 in children during the first year of life. The appendix was attached to the sac and testes in 3 cases. The ascending colon was adherent to the sac in 2 instances, but the cecum was free in all cases.

The two most discussed factors in the causation of sliding hernia in children are the rotation of the cecum and the descent of the testes during fetal life. Treves states that the cecum remains underneath the liver until the fourth month after birth. The finding of the cecum in the patent vaginal process at the eighth fetal month makes Treves' view doubtful.

Lockwood suggests that the cecum is pulled into the scrotum by the persistence of a fold he found running from the mesorchium of the testicle along the posterior abdominal wall to end in the cecum, appendix, or mesentery. Most men do not agree with Lockwood's theory because the vaginal process is in the scrotum before the testicle descends. It would seem that a more likely result of an adhesion between the testicle and cecum would be an undescended testicle.

Three explanations of incorporation of bowel as part of the hernial sac are given:

1. Fetal peritonitis (unlikely because there is no other evidence of results of fetal peritonitis).
2. Fusion of peritoneal surface of the cecum which has found its way into the hernial sac to the peritoneum of the vaginal process. (Most likely in author's opinion.)
3. Fusion of peritoneal surface of the cecum to that part of the parietal peritoneum which later will become the vaginal process of peritoneum the sixth or seventh month of fetal life and consequent descent of the cecum into the hernial sac in this way.

Three cases of sliding hernia are given, in all of which the cecum was incorporated in the wall of the sac.

Illustrations of technique are given which consist of:

1. Transverse division of sac between appendix and testicle with immediate closure of testicular portion of sac by purse-string, thus re-establishing the tunica vaginalis testis.
2. Appendix then removed with its sac wall.
3. Sac divided longitudinally having a posterior wall made up of cecum and an anterior wall of peritoneum.
4. The posterior cecal portion is returned to abdomen through the internal ring after it is separated from the cord and its surrounding soft parts up to the internal ring.
5. The anterior peritoneal portion of sac was cut away except enough to imbricate and sew over the posterior wall of the inguinal canal.

V. C. HUNT.

PEDIATRICS

SUPERVISORS:
 FREDERICK C. RODDA,
 CHILDREN'S CLINIC, MINNEAPOLIS
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SOME POINTS ON HEART DISEASE IN CHILDREN—J. Porter Parkinson (*Arch. of Ped.*, Feb., 1923). Inequalities of the pulse are very common and are frequently of no pathological significance at all. Another variety of irregularity of the pulse is extrasystoles which are premature contractions. These extrasystoles often occur in neurotic children, or in those subject to attacks of indigestion, or they may be seen during the convalescence after some acute disease. If the child has no symptoms or signs of heart disease, the mere presence of extrasystoles is of no clinical importance whatsoever and their presence may be ignored.

Bradycardia is not very uncommon during convalescence from some acute disease, such as pneumonia or influenza. Tachycardia, a rapid action of the heart, is a natural consequence of fever, exertion, emotion, etc., but it may occur as a solitary phenomenon in an otherwise apparently healthy child. Syncope is a symptom which the lay public generally attributes to heart disease, but in children this symptom, which is not uncommon, is not associated with any form of cardiac weakness. It is generally of nervous origin and occurs in nervous, debilitated, anemic children or may be due to the stress of school life.

Non-organic murmurs, generally called functional, or accidental or cardiopulmonary, are very frequent in children and are of no importance whatsoever and so it is of the greatest importance that one should know how to recognize them and distinguish them from murmurs due to valvular disease. The cardiopulmonary murmur is usually heard in the region of the apex, but sometimes is to be heard at the base of the heart; it is usually systolic in time but a diastolic murmur may also be present. Pulmonary systolic murmur is a very common murmur in children; it is localized usually in about the 2nd intercostal space close to the sternum. It is usually soft and blowing and is not accompanied by any signs of heart disease, such as dilatation, or by any symptoms. This murmur is of no significance and generally disappears about puberty. Feeble, badly nourished, nervous children often develop a systolic murmur heard at the apex of the heart and probably of mitral origin. The murmur is generally faint and may be absent from time to time. It does not indicate disease of the mitral valve, and treatment should be directed to improving the nutrition and the general health. Organic heart disease appears to be becoming increasingly common in children, and the first point to mention is that valvular disease is often only a small part of the trouble; the condition of the cardiac muscle and the presence or absence of adhesion of the pericardium being of much greater importance.

The greatest importance should be attached to persistent tachycardia in a rheumatic child who has other symptoms

and signs of heart disease, and such a child should be kept at rest in bed till the frequency of the heart has lessened along with the dilatation. Dilatation of the heart is a very frequent sign in heart disease in children; it is of the first importance not to mistake displacement of the heart for dilatation. Distinction must be made between acute dilatation, due to failure of the muscle of the heart, and chronic dilatation, which is part of the compensatory mechanism in chronic valvular disease.

The signs of cardiac failure in children differ markedly from those of adult life in that anasarca is not usually present. The amount of urine is also a guide to the progress of a case. At least six months should elapse after carditis before the child may be allowed to take up a normal life, and it is obviously impossible to keep children in hospital for such a long period, the result being that the child is sent home after 6 or 8 weeks of hospital treatment and is allowed to resume its normal life. The results of this, at least among the laboring classes, are disastrous. It seems to the author that if it were possible to institute country homes to which these children could be sent for some months, and guarded from over-exertion, while, if necessary, they might continue their education, we should do much to prevent chronic heart disease.

R. N. ANDREWS.

RICKETS—Eric Pritchard (*Arch. of Ped.*, Feb., 1923): All conditions of malnutrition in infants and young children, arising from any cause whatsoever, whether of bad feeding or mal-hygiene, provided they are severe enough, and long enough continued, must inevitably lead to the condition we call rickets, for the reason that all such conditions conduce to the development of an acidosis, and consequently to mineral depletion and calcium impoverishment, which causes a rickety condition.

A very large number of experiments have been made which prove that in rickets there is no noticeable shortage of calcium in the blood, however great may be its shortage in the body as a whole or in the bones in particular. But this is rather what would be expected, for calcium is such an important and vital constituent of the blood and such an essential element in metabolism that no great reduction of it in the blood itself would be compatible with a continuation of life. If the views of Ylppo, of Michel and Hugoumen and of Hamilton are correct, there is a congenital calcium reserve in the bones of all full-time newly-born babies which can be drawn upon to make good any deficiency of lime which may exist in their food. This fact is offered in explanation of the comparatively rare appearance of rickets in young infants of full term, whereas in premature infants, in whom there is no such reserve, rickets develops frequently and at an early date.

It is clear that in conditions of ill health, in which the physiological output of energy is less than the total value of the potential energy of the food, the output can be equated to the intake and health restored by any expedient or expedients which increase metabolism or the output of physiological work and heat, as, for instance, by the taking of increased exercise or by exposure to increased cold. On the other hand, a condition of equilibrium or bodily health, in which the output and intake are equal, can be disturbed

by any event or events which depress metabolism or restrict the output of energy. Such depressants include high external temperatures, stuffy atmospheres, the limitation of exercise, want of sun, mental depression. It will be noticed that the depressants of metabolism include some of the well-recognized etiological factors which singly or in combination predispose to rickets by interfering with the efficiency of the body as a working machine, and thereby limiting the output of useful work. A diet which is preeminently rachitic can be rendered physiologically correct if, under the existing circumstances, it is possible by appropriate forms of stimulation to make the child display more energy and increase his output of work. On the other hand, an environment which is well designed to produce rickets may be shorn of its immediate dangers if the intake of food can be adjusted to the existing output of energy.

In conclusion, I would point out that all known and recognized etiological factors in rickets are also familiar as etiological factors in the production of an acidosis. Secondly, that all the clinical symptoms of rickets, i.e., the mineral depletion of the tissues, the excessive calcium output, the muscular debility, the nervous irritability, as well as many others, are obviously the result of an acidosis which creates a demand for calcium which is far more urgent and vital than the less essential claims of growing bones or other tissues.

There is no theory of rickets other than this acidosis theory which is capable of explaining all the known etiological, pathological and therapeutical facts connected with the causation and treatment of rickets, and for this reason, if for no other, and by a process of exclusion, one is forced to believe that an acidosis is the true cause of rickets, and that all the factors which are claimed by one or other authority to be causes of rickets are merely remote or contributory factors in the etiology.

R. N. ANDREWS.

THE PATHOGENESIS OF CELIAC DISEASE—Reginald Miller, London (Arch. of Ped., Feb., 1923): Celiac disease shows one essential and constant feature, that is, the failure to absorb properly the fat in the food. It is well known that the classical type of celiac stool, large, pale, unformed and very offensive, contains a great excess of fat which is chiefly in the form of fatty acids. This failure in fat-absorption is accountable for the cardinal symptoms of celiac disease, (1) the characteristic fatty stool, (2) the enlargement of the abdomen without signs of gross abdominal disease, and (3) the retardation of growth and development. It also causes the two other most frequent symptoms, the severe impairment of appetite and the tendency to feverish attacks; for both these are usually controlled by the rigorous diminution of the amount of fat taken in the diet.

It would seem the failure to absorb fat can only be attributed to one or more of three organs—the pancreas, the small intestine or the liver. The author has analyzed many stools and has quite confirmed the opinion that the pancreas is not to blame for the failure in fat absorption in celiac disease. Where the pancreas fails, fat-splitting fails, and this does not happen in celiac disease. Quite a super-

ficial view shows us that we are not dealing merely with an enteritis. In these cases we do not watch a diarrhea becoming so severe that fat-absorption fails; on the contrary, we see a case in which fat-absorption is interfered with from the beginning and throughout the course, whether there be diarrhea or not.

The treatment nowadays adopted as a routine, namely, the rigorous withholding of fat in all forms, proves the same point. This surely is a recognition of the fact that celiac disease is due to a digestive fault not dependent upon gross changes in the organs.

The failure in the fat-absorption is constantly just what would occur if the bile-salts failed to act: always the fat in the intestine is prepared for the action of the bile-salts, but at that point the normal mechanism breaks down. Where diet is given which is approximately correct in fat-content, it is often found that the addition of bile-salts will quickly reduce the amount of fat in the dried feces, will lead to the passage of smaller and darker stools and perhaps to constipation, permitting the use of a richer diet. Bile-salts will not automatically put fat-digestion perfect in celiac disease; no one would claim that they could do so in a case of obstructive jaundice; but their good effect is quite noticeable if they are correctly used and compares very favorably with that of pancreas preparations in the treatment of pancreatic steatorrhea.

R. N. ANDREWS.

GYNECOLOGY AND OBSTETRICS

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THE CHOICE OF METHODS FOR MAKING LABOR EASY—Arthur H. Bill (Amer. Jour. Ob. and Gyn., vol. iii, p. 65): This author accepts the idea of the routine use of proper methods to eliminate the pain and discomforts of labor. He realizes the danger of the ultra-radical measures and in this article discriminates in the selection of methods. He considers: 1. Relief of pain. 2. Shortening of the second stage of labor. 1. Relief of pain. He uses morphine and scopolamine during the first stage, but withholds it during the second stage or within 2 hours of delivery. In multiparæ and many primiparæ general anesthetics, preferably ether with the closed cone, is extensively used. In 500 cases, methods were used as follows: Ether alone in 288. Morphine, scopolamine, plus ether in 192. Morphine, scopolamine, plus nitrous oxide in 19. Nitrous oxide and ether in 56. Nitrous oxide alone in 5. 2. Shortening labor. The author approves of almost routine intervention provided such measures are limited to the second stage. The article does not indicate what he considers as test of labor, but judging from the figures given it can not be at all arduous to the patient or obstetrician. 500 cases were delivered as follows:

High forceps, 41, including 32 occiput posterior converted by forceps.

Medium forceps, 81, including 40 occiput posterior converted by forceps.

Low forceps, 236, including 6 occiput posterior converted by forceps.

Podalic versions, 71, including 52 occiput posterior converted by forceps.

130 total

Breech extract, 19.

Abdom. Cesarean, 26.

Vag. Cesarean, 3.

Pubiotomy, 3.

Craniotomy, 1.

Spontaneous birth, 19.

Fetal mortality 9, or 1.8 per cent stillbirths and 7 or 1.4 per cent in first 2 weeks. The author does not select the exact method of delivery till his patient is anesthetized in most cases. At this time any abnormality of position is corrected and the simplest operation for delivery is then selected.

ARCHIBALD L. McDONALD.

THE PRESENT STATUS OF OPERATIVE OBSTETRICS REFERRING TO THE ABUSE OF CESAREAN SECTION—J. O. Polak (Surg. Gyn. and Ob., vol. 85, p. 566): This address given before the American College of Surgeons in 1921 well represents conservative ideas in obstetrics. It is an able protest against the more radical teaching and is an excellent presentation of results of "aseptic intelligent expectancy." In the author's series of 1,000 cases operative intervention was undertaken as follows: Forceps low and median 22. Version, internal or bipolar, 5. Induction of labor by bag, 4. Manual conversion of face to vertex, 2. Perforation of the aftercoming head, 1. Cleidotomy, 1. Cesarean section, 8. There were 19 stillbirths or a fetal mortality of 1.9 per cent. To this should be added 6 more babies which died during the first two weeks, giving a total mortality of 2.5 per cent. The series included 106 patients with contracted pelvis, 344 with occiput posterior at the onset of labor, and 42 with abnormal presentation, including: 27 breech, 6 face or brow, 4 transverse, 4 sets of twins, and 1 complex with the head and cord presenting.

He does not advise premature induction of labor in contracted pelvis because of added danger of infection, complications, premature rupture of membranes, abnormal position, or prolapse of the cord. Cases with relative degree of pelvic contraction should have an aseptic test of labor since 80 per cent may be delivered spontaneously or at most by low forceps. High forceps operations are condemned but low forceps under proper indications is purely life-saving. Version has a wider field than has been generally admitted but is not justifiable as an elective routine procedure in normal cases. Clean elective Cesarean section imposes a greater risk than that of operations for pelvic tumors, due to the presence of infective bacteria in the cavity of the puerperal uterus. Polak's studies indicate that the actual maternal mortality following Cesarean section ranges from 2.9 per cent to 14 per cent depending on

the time in labor at which the operation is done, i. e., after rupture of the membranes and vaginal invasion by examination or operation.

ARCHIBALD L. McDONALD.

STUDY OF PHYSICAL SIGNS OCCURRING IN A CASE OF PNEUMONIA OCCURRING AFTER A TRACHEOTOMY—Pallasse (Prog. Med., April 23, 1921, p. 197. Translation by E. H. Sirich): The present review may be of interest in relation to one published in these columns in October, 1922, an article by Rist. The author studied the physical findings in a case of pneumonia in a patient that had previously had a tracheotomy. The patient was made to breathe through the tracheal wound with the mouth and nose closed. The tubal sound did not disappear at this time, neither was the murmur greatly modified when he was made to breathe through the larynx with the wound closed. The author believes that the larynx plays a definite part in the production of respiratory murmurs but believes that the real cause of the various sounds is not yet well understood and that no definite conclusions can be drawn without further experimentation.

In one case observed by the reviewer the normal breath tones were not greatly changed when the patient was made to breathe first by one path and then by the other. Those interested in the transmission of respiratory and voice sounds are referred to studies made by Montgomery and Eckhardt published in the tenth report of The Phipps Institute.

T. A. PEPPARD.

ROENTGENOLOGY

SUPERVISORS:

C. U. DESJARDINS,
MAYO CLINIC, ROCHESTER

R. G. ALLISON,
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RELATIVE VALUE OF SURGERY AND ROENTGEN RAY IN THE TREATMENT OF HYPERTHYROIDISM—Edward P. Richardson (Jour. A. M. A., March 24, 1923): Thyroid disease may be classified on two bases, (1) function, and (2) pathological changes in the gland itself. On the first basis, there may be excessive, normal, or reduced activity, and on the second, hypertrophy and hyperplasia, the disposition of colloid, the presence of adenomas, of malignancy, or of inflammation. For the present, we are interested only in those cases of thyroid disease which show evidence of an associated constitutional disturbance, apparently due to a toxemia, and best explained by an increased output of thyroxin. Persistent increase in thyroid activity occurs, mainly, in conjunction with two types of changes in the gland itself, one a diffuse hyperplasia classified as hyperthyroidism and the other adenomatous change, classified as adenomatous goiter with hyperthyroidism.

Holmes and Merrill correctly believe that roentgen-ray treatment should be limited to cases which show symptoms

due to an increased function of the gland, while goiters with normal or reduced function, requiring treatment for deformity, pressure, potential malignancy, or potential hyperthyroidism, should be treated by surgery only. The only exception is in cases of definitely inoperable malignancy.

The treatment of hyperthyroidism with the roentgen ray requires (1) modern equipment, with ability to measure dosage, (2) a frequent check on the degree of benefit by basal metabolism determinations, and (3) careful and accurate clinical supervision, with an open mind in regard to switching to surgical treatment if indicated.

Permanent reduction of the basal metabolism to within normal limits, ordinarily accompanied by marked improvement in subjective and objective symptoms is considered a "cure." However, permanent organic changes may have occurred, which neither surgery nor the roentgen ray can hope to relieve.

A comparison of fifty-eight cases of hyperthyroidism treated by roentgen ray, with thirty cases treated by thyroidectomy, both groups including exophthalmic goitre and toxic adenoma, shows that the average results in the surgical cases are better than in those treated by roentgen ray. The metabolism shows a drop to about plus 10 for the former, as compared with plus 20 for the latter; the pulse a drop to 80 as compared with 90; the weight a tendency to more persistent and greater increase.

The improvement in the cases treated by the roentgen ray was sufficiently sudden and striking to prove that the change was due to the treatment. In some cases, the results were brilliant; in no case did the patient grow worse. It is difficult to select cases in which good results should be obtained. Age, sex, and intensity of the hyperthyroidism seem to be unimportant. However, cases which are unsuitable are as follows: (1) In adenoma with hyperthyroidism, the cause seems to be within the thyroid gland, and it is logical to remove this cause surgically. Also, surgical results are excellent at the present time, in this type of case. (2) In the group of cases which show organic damage, particularly cardiac, the time consumed by roentgen-ray treatment may lead to further damage, with the chance of very little improvement in the hyperthyroidism at the end of this time. The economic situation may affect the choice. A wage earner may desire surgery because it is more rapid and certain, while a mother with small children would prefer the safer course of a series of roentgen-ray treatment. Although surgery at the present time is more effective in the average case, yet when the safe removal of a proper proportion of the gland has been accomplished, surgery has reached its limit. The roentgen ray, however, has the possibility of indefinite expansion, and future improvements in technique may lead to results as yet unobtainable.

The chief advantage of roentgen-ray treatment is that its immediate mortality is nil. Certain minor advantages,—absence of discomfort of operative procedures, scar, and hospitalization—should have only slight consideration in the treatment of a serious disease.

Improvement is not temporary. A few cases show a rise in metabolic rate after a period within normal limits, but practically all of these have a second drop to normal. Rare-

ly a case develops myxedema, usually temporary, and not definitely as a result of the treatment. In the cases studied, which came to operation following roentgen-ray treatment there was no appreciable increase in the difficulty of operation. The time required for treatment should be limited to four months, which is no longer than is often necessary in a several stage operative procedure. The most serious difficulty lies with those patients who are improved but not cured. Many of these refuse operation, although they are still thyrotoxic and surgery is indicated. A few cases abandon treatment before any improvement is obtained. If these had been operated, a complete cure might have been obtained for them.

A. W. DESJARDINS.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

ABDOMINAL PAIN. Norbert Ortner, M. D., chief of the Second Medical Clinic at the University of Vienna. Authorized translation by William A. Brams, M. D. and Alfred P. Luger, M. D. 362 pages. New York: Rebman Company, 1922.

IMPOTENCY, STERILITY AND ARTIFICIAL IMPREGNATION. Frank P. Davis, M. D. Second edition, revised and enlarged. 168 pages. St. Louis: C. V. Mosby Company, 1923. Cloth, \$2.25.

CLINICAL LABORATORY METHODS. Russell Landram Haden, M. A., M. D. Associate professor of medicine, University of Kansas, Kansas City, Kansas, School of Medicine; formerly director of laboratories, Henry Ford Hospital, Detroit. 294 pages. 69 illustrations; 5 color plates. St. Louis: C. V. Mosby Company, 1923. Cloth, \$3.75.

THE RIDDLE OF THE RHINE. Victor Lefebure, Officer of the Order of the British Empire, Chevalier de la Legion d'Honneur, Officer of the Crown of Italy, Fellow of the Chemical Society. Preface by Marshal Foch and introduction by Field-Marshal Sir Henry Wilson, Bart. 282 pages. Illustrated. New York: E. P. Dutton & Company, 1923.

THE PATIENT'S VIEWPOINT. Dr. Paluel J. Flagg, author of "Art in Anesthesia." 182 pages. Milwaukee: Bruce Publishing Company, 1923. Cloth, \$1.30 net.

THE FORM AND FUNCTIONS OF THE CENTRAL NERVOUS SYSTEM. Frederick Tilney, M. D., Ph. D., Professor of Neurology, Columbia University; Attending neurologist, Presbyterian Hospital and New York Neurological Institute; Consulting neurologist, Roosevelt Hospital, New York; and Henry Alsop Riley, A. M., M. D., Associate in Neurology, Columbia University; Associate attending neurologist, New York Neurological Institute; Attending physician neurological department, Vanderbilt Clinic, New York. Second edition. 1,019 pages. 591 figures, 763 illustrations, 56 colored. New York: Paul B. Hoeber, 1923. Cloth, \$12.00.

NURSERY GUIDE FOR MOTHERS AND NURSES. Louis W. Sauer, M. A., M. D., Senior attending pediatrician, Evans-ton Hospital; formerly attending physician, Chicago Infant Welfare, and assisting attending physician, Children's Memorial Hospital, Chicago. 188 pages. Illustrated. St. Louis: C. V. Mosby Company, 1923. Cloth, \$1.75.

LEGAL MEDICINE AND TOXICOLOGY. By many specialists. Edited by Frederick Peterson, M. D., Manager Craig Colony for Epileptics; Walter S. Haines, M. D., late Professor of Chemistry, Materia Medica and Toxicology, Rush Medical College; and Ralph W. Webster, M. D., Assistant Professor of Medical Jurisprudence, Rush Medical College. Second edition. Two octavo volumes, totaling 2,268 pages, with 334 illustrations, including 10 insets in colors. Philadelphia and London: W. B. Saunders Company, 1923. Cloth, \$20.00 net.

PRACTICAL LOCAL ANESTHESIA AND ITS SURGICAL TECHNIC. Robert Emmett Farr, M. D., F. A. C. S., Minneapolis. 219 engravings; 16 color plates. 529 pages. Philadelphia and New York: Lea & Febiger, 1923. Cloth, \$8.00.

NON-SURGICAL DRAINAGE OF THE GALL TRACT: a Treatise Concerned with Digestive Treatment of Certain Diseases of the Biliary and Allied Systems, in their Reaction to Gastro-Enterology and General Clinical Medicine. B. B. Vincent Lyon, A. B., M. D., chief of Clinic, Gastro-Intestinal department of Jefferson Hospital; Associate in Medicine, Jefferson Medical College; attending physician, Methodist Episcopal Hospital, Philadelphia. 175 engravings; 10 colored plates. 640 pages. Philadelphia and New York: Lea & Febiger, 1923. Cloth, \$10.00.

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ORIGINAL ARTICLES

ORTHOPEDIC SURGERY OF THE UPPER EXTREMITY*

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Iowa City

For the last seven years, we have given a great deal of attention and much study to the disabilities of the upper extremity. Such a problem is, naturally, difficult, intricate, and in its application to surgery certainly new and undeveloped. We found it best to approach it with caution in an analytic sort of a way, by which, joint for joint, the principal disabilities are first recognized and then the necessity as well as the practicability of surgical intervention is considered. Now, primarily, such disabilities may be morphological or dynamic in nature; that is, they may be due to position or due to motor inability; but, inasmuch as function and position are so closely interrelated in the joints of the upper extremity, clinically such a separation of conditions into positional and dynamic ones is not practical, and we prefer rather the regional distinctions.

For the shoulder, the position of greatest disability is fixation in adduction and inward rotation. The principal motion in the joint is abduction. Flexion and extension comes next and rotation is the last in importance. Inability of abduction is encountered in many orthopedic conditions. It is inhibited passively by contractures following capsular injuries, tendon tears, in subdeltoid bursitis, in birth palsy, in bone injuries, and in many other conditions. Active abduction may be lost in all kinds of paralyses—peripheral, spastic, and poliomyelitic.

In the elbow again, the position of greatest disability is extension. The principal motion is flexion. We find flexion extension inhibited by con-

tractures after bone injuries, in ischemic contractures, or contractures of any other kind; in traumatic and inflammatory ankylosis of the joint, etc.

We also find frequent loss of active flexion in all forms of paralysis, birth palsy, peripheral paralysis, spastic paralysis, and anterior poliomyelitis.

The same may be said of the loss of pronation and supination of the elbow, where contractures and ankylosis as well as loss of active motion follows such conditions as mentioned above.

For the wrist, the position of greatest disability is full flexion. Active extension or extension position is here often more important than active flexion because the principal physiological position of the wrist is that of slight hyperextension. Here we find flexion deformities in all kinds of injuries to the forearm bones or the bones of the carpus, as well as in ischemic contractures and in scar contractures of all kinds; in contractures following tenosynovitis, etc. On the other hand, the paralytic drop wrist is a very common occurrence following infantile as well as peripheral paralysis.

For the fingers, the position of greatest disability is hyperextension in the metacarpo-phalangeal joints, and for the thumb that of adduction and extension, because both conditions interfere with the free play of opposition of the thumb and the closure of the fingers which are so fundamental for the function of the hand. Finger motion is inhibited passively in contractures of all kinds following injury of the bone; following injuries or inflammatory condition of the joint; in ankylosis of wrist and fingers; following tenosynovitis, and following ischemic contractures. Loss of finger motion is very frequent in peripheral injuries, in spastic contractures, in infantile paralysis. Loss of active opposition of the thumb is often seen in thenar palsy following infantile paralysis as well as paralysis of the peripheral nerves.

Practically all surgical interference in chronic disabilities of the upper extremity is conditional

*Presented before the Southern Minnesota Medical Association meeting, Mankato, December, 1922.

upon the failure of accomplishing natural recovery by conservative methods: this means, in cases of contractures, mechanical treatment with splints or apparatus; in case of paralysis, also the treatment with splints, and in both types the after-treatment upon physiotherapeutic lines should precede any surgical indication. Exception to this can be found only in such conditions as are obviously not amenable to conservative means, such as ankylosis of the joints.

Of this large number of conditions, time permits only the selection of a few types.

An example of shoulder contraction is the condition seen in birth palsy or in some injuries to tendon insertions at the upper end of the humerus. The choice of methods naturally falls first on the bloodless manipulation of the joint from the disabled position of contracture to a functionally more favorable position, at the same time overcoming the contracting forces. To this group of contractures may also be added the subdeltoid bursitis, which is an inflammation either of the subacromial bursa itself or more often an injury to the tendon underlying the bursa with subsequent tendon degeneration and deposit of lime salts.

The majority of all these conditions mentioned is amenable to manipulative correction with or without the application of an anesthetic, and followed by the application of a splint and by massage and active and passive motion. A word may be said here about manipulation of contracted joints in general. In our series, twenty-one joints of the upper extremity have been manipulated. The results obtained only confirm the conviction of the writer that in manipulating a joint the all-important point is whether the lesion is intra-articular or extra-articular. Extra-articular lesions are amenable to permanent correction by forcible manipulation carried out judiciously and with care. The result will be a more or less complete return to normal function. Intra-articular lesions are not amenable to passive manipulation as far as function of the joint is concerned; that is, no gain of motion can be expected by the forcible manipulation of joints with true intra-articular adhesions. The gain can only be in position and not in range of motion. This rule does not apply to massage and gentle passive motion. Where the line of cleavage is between manipulation and passive motion, it is hard to say. It certainly does not lie in the

application of an anesthetic; but the point is that any brisk handling or manipulating of a joint harboring adhesions must lead to blood effusion, which again will result in the reforming of adhesions in even greater numbers.

When the contracture of birth palsy does not yield to passive stretching, the operation best performed is that of Sever, which consists essentially in open tenotomy of the contracted tendon of the subscapularis. This operation was performed five times with satisfactory results.

Some cases of subdeltoid bursitis also demand operative interference, especially those in which a lime-salt deposit exists in the supraspinatus tendon. Here the operative interference consists in the opening of the bursal sac, and the removal of the deposit through the incised floor of the bursa. This operation was performed seven times in the author's series. In all instances, the after-treatment is fixation by plaster of Paris casts or splints in the desired position, and the application of active and passive motion and massage.

The Flail Shoulder.—The best example of this condition is encountered in paralysis of the deltoid muscle in anterior poliomyelitis. Loss of this muscle is found in 85 per cent of all cases of infantile paralysis of the upper extremity. The definite loss of the muscle can only be established by the failure of a properly applied and extended conservative treatment of splinting, massage, etc., or in cases in which degeneration of the muscle is quite evident. The surgical indication in a case of permanent loss of the deltoid is arthrodesis of the shoulder joint. In this operation, the shoulder joint is approached from a U-shaped incision around the acromion, the tip of which is chiseled through to gain better access to the joint, and is deflected downward together with the degenerated deltoid muscle. The arthrodesis itself is accomplished by complete denuding of both the glenoid fossa and the head of the humerus.

At operation, a plaster cast is applied with the arm in position of right angle abduction and slight forward flexion in children, and 70 degrees abduction and slight forward flexion in adults. The cast remains for three months and is then substituted by a splint in the same position so that massage and active and passive motion may be instituted, the splint being lowered gradually and being finally discarded after another three months. Twenty-eight

cases of this kind were operated, practically all for flail shoulder in infantile paralysis. The results were good in seventeen of these cases, fair in five, poor in one and in five the result could not be determined.

The Elbow.—An example of motor disability of the elbow is contracture and ankylosis following injury. The elbow is *the* joint of the upper extremity in which arthroplasty is indicated, partly because of the comparatively good results attending the arthroplasty of this joint and partly because neither in the shoulder nor in the wrist can the arthroplasties in any way compare with the results obtained by arthrodeses in these two latter joints.

According to Henderson's collective statistics, the arthroplasty of the elbow is attended by good results in 76 per cent. For this operation a U-shaped incision from the outer to the inner border of the humerus, crossing the base of the olecranon, is to be recommended. Putti uses the old Kocher incision, which starts from the outer side of the humerus and crosses the olecranon in the shape of a J. The essential points of technique are: the careful shaping of the articular ends with especially constructed chisels and gauges, and the careful smoothing and filing of the bone surfaces; a thorough and painstaking hemostasis; the proper placing of the fascia flap taken from the thigh, and the most accurate and careful suture of the soft parts. Even then the ultimate result of the operation stands or falls with the after-treatment. The joint should be immobilized in plaster in a position of acute flexion for eight or ten days until the post-operative reaction has entirely subsided. Then a splint is applied and active motion begun. Passive motion follows three weeks after the operation. The massage may begin early. Of the twelve cases operated by the writer, the result was good; that is, the range of motion was 70 degrees or more in seven cases; fair, with the range of motion from 40 to 70 degrees in two cases; and poor, less than 40 degrees in three cases.

The Flail Elbow.—The flail elbow is encountered often as sequela to anterior poliomyelitis when the flexors of the joint are lost. This problem is a very perplexing one. When no muscles are available for transplantation, one must consider the arthrodesis of the elbow, but this again is a rather difficult operation, uncertain of outcome, and cannot be applied to children.

Fortunately, in most of the cases, the flexors of

the fingers and wrist can be made available for flexion of the elbow by a simple method of transposition which the writer has used in twenty-one cases.

By this method the superficial flexors of the wrist, namely, flexor carpi radialis, palmaris longus, and flexor carpi ulnaris, are isolated from their origin at the inner epicondyle of the humerus, together with the superficial head of the pronator radii teres, for a distance of one and one-half inches, taking care not to injure the nerve supply from below coming from the median nerve. This bundle is then pulled upward and fastened into the intermuscular septum of the humerus between triceps and brachialis anticus, one and one-half inches higher up. In this way the leverage of these muscles is so changed that they now act as flexors of the elbow, although their power is rather limited. After the operation the elbow is placed in a splint in acute flexion, and active motion and massage is begun two or three weeks later. The splint remains for three to six months. Especially when carried out in combination with arthrodesis of the shoulder, this operation gives very satisfactory results. Of the twenty-one cases operated, the results were good in seventeen. In the remaining four, they were either fair or poor.

Forearm.—In pronation contractures of the forearm, such as encountered in Volkmann's contracture or in spastic paralysis, if the condition does not yield to splinting, the surgical procedure to be applied is the resection of the pronator radii teres and the section of the pronator quadratus. The former muscle is reached easily by an incision which follows its course on the forearm. The latter muscle can be dissected out from a volar incision over the lower third of the forearm, upon proceeding into the depths bluntly and separating the deep flexor tendons. This operation is also to be followed by special splints which hold the forearm in supination, and by proper physiotherapeutic exercises and training. Of eight cases operated on, the anatomical result was good in all, as the contracture was released, but only in exceptional cases active pronation can be obtained. As a general rule, the patients have to depend upon substitutionary rotation in the shoulder to produce this motion.

The Flexion Contracture of the Wrist.—Most of the cases encountered were Volkmann's contracture and spastic paralysis cases. In both instances the conservative treatment should be given a thorough

trial. This is especially true of the ischemic contracture of Volkmann because here we have an excellent method in the Robert Jones application of splints, by which a gradual straightening, first, of the fingers, and then of the wrist, is accomplished. Only when this method fails, and in cases of ischemic contracture it may do so by reason of unmanageable contracture of the flexors of the wrist, operative lengthening of the flexor tendons is indicated. In this procedure the contracted tendons are picked out one by one from a volar incision and lengthened. Twenty-six cases were so operated on. In practically all the cases, the desired correction of the wrist was obtained. In one case of Volkmann's contracture, a subsequent resection of the forearm bones was necessary to make the correction complete.

The Drop Wrist.—In case of a paralytic drop wrist either from peripheral or central causes, the points to be considered are: first, correction of the deformity; and, second, the restoration of function. Of these two points, the first is undoubtedly the most important because stability of the wrist in good position will assure good function, whereas mobility of the wrist without stability will not. Tendon transplantation is only indicated when it can furnish not only active extension but stability in active extension as well. It is therefore indicated in some cases of peripheral paralysis such as musculospiral paralysis, in which the entire flexor group of muscles is intact. Twelve cases of tendon transplantation were carried out, of which four were transplantations of the flexors to the extensors in extension contractures of the wrist in infantile paralysis. None of these cases gave satisfactory results. Five other cases were transplantations of the flexors to the extensors in cases of drop wrist. The results in the traumatic cases were better than in the poliomyelitic cases. In these cases, the flexor carpi radialis was carried around the outer border of the radius to the extensors of the finger while the flexor carpi ulnaris was led to the dorsal surface through the interosseous space.

In the majority of cases, however, the question of drop wrist must be solved by arthrodesis because there are not enough muscles available to take care of both the motion and stability of the wrist, and motion of the fingers. In combination with arthrodesis of the wrist, the transference of the flexors of the wrist to the extensors of the fingers gives much better results.

Arthrodesis of the Wrist.—This is a very simple procedure which can be performed from a simple dorsal incision of the wrist between the extensor pollicis longus and the extensor indicis proprius. The arthrodesis is accomplished by a wedge resection of the lower end of the radius and part of the scaphoid and semilunar bones. Following operation, a cast is applied in dorsiflexion. In the paralytic drop wrist, it remains for two months, and in the spastic drop wrist, for three months. Following this a splint is applied. The position is that of slight hyperextension. The fingers should be left free. The operation was performed thirty-five times and in the majority of cases the desired correction and stability was secured. A few cases in which the operation failed were either children too young, that is, below six or eight years, or spastic cases in which complete immobilization of the joint was not possible.

The Thumb.—The deficiencies of the thumb are represented by two main groups. In one, the paralytic group, the thumb is adducted and cannot be opposed to the other fingers. In the other, the spastic group, the thumb is drawn against the palm with each attempt to double the fist. The first group was managed by a slight plastic operation in which the long flexor of the thumb was split and its outer half carried outward and backward to the base of the basal phalanx of the thumb. In this way, the muscle acted both as flexor and opponent of the thumb at the same time, and opposition was possible. This operation was carried out in thirteen cases of poliomyelitic or peripheral paralysis of the thenar muscles and was attended by good results in all except two cases.

In the other group, the catching of the thumb under the fingers was prevented by the implantation of the extensor indicis proprius upon the long extensor of the thumb in order to create a check to flexion. This operation was carried out in spastic cases fifteen times.

Cicatricial Contractures.—An interesting group are the cicatricial contractures following burns. In eight of our cases, the pedicle flap method, or so-called Italian method of Tagliacozzi, was used. Four cases were contractures of the wrist; one case contracture of the index finger; one case contracture of the thumb; one case of syndactylism, and one case of contracted elbow. A few points must be observed in the technique of this method. The flap must be designed properly upon abdomen

or chest so that its direction corresponds to the distribution of the arterial blood supply of the skin. It does not need to be very large. One-half inch overlapping of the defect on each side is sufficient for ordinary-sized flap. It should not be too heavily endowed with fat nor should it be stripped too close. Hemostasis must be perfect, and suture most accurate, and yet allow for the oozing of secretions. Fixation of the limb is best secured in plaster of Paris bandage. The pedicle should not be cut for twenty days.

In conclusion, one word may be said about the after-treatment, especially the muscle educational part of it. This we have tried to systematize by introducing standard exercises with standard objects. The principle of it is to develop primitive motions first; and later the complicated ones which lead to occupational therapy. The cardinal point is co-ordination. All motions must be co-ordinated to time as well as space. Charts are made upon the Cartesian co-ordinates principle, which gives account both of the motion performed and the velocity of it.

DISCUSSION

DR. EMIL GEIST, Minneapolis: In the foot the attempt of the orthopedic surgeon is to achieve stability. Cases of foot and leg disability are much more frequent than in the arm. Doctor Steindler is a pioneer in attacking the much more difficult problem of making a more useful organ of a damaged upper extremity; here the problem is not stability so much as it is the making of the arm more useful. Orthopedic surgeons must thank Doctor Steindler for what he has done and what he has shown tonight in achieving these results.

The calcareous areas in the supraspinatus tendon as shown on the screen will often disappear without operation. I have followed several cases.

Arthrodesis in flail shoulder, due to infantile paralysis, can be considered as a standard operation and transforms a fairly useless arm to one that is more useful, providing the elbow and wrist are movable. The elbow arthroplasties are always, or nearly always, successful, as Doctor Steindler has told us. I am reminded of a group of cases shown about twenty-five years ago by the late Dr. Charles A. Wheaton of St. Paul, in which the old-time resection of the elbow had been done and in which practically normal functioning elbows had been achieved by an operation doubtless much cruder than the arthroplasties described by Doctor Steindler. In elbow arthroplasties it is essential to remove enough bone.

In Volkmann's contracture, most, though not all, cases are due to too tight bandaging. When ischemic contracture has occurred, I should like to re-emphasize what Doctor Steindler has said regarding conservative treatment, the so-called Robert Jones method. By this method one can

often achieve great correction of deformity if the case is not of too long standing.

DR. HENRY W. MEYERDING, Rochester, Minn.: Doctor Geist has called attention to the frequency with which tight bandaging has been an etiological factor in Volkmann's ischemic contracture. In my work I see a number of supracondylar fractures of the elbow that have been treated in the commonly accepted Jones' Flexion position. This is the position to maintain reduction of the fracture and to get the most favorable result so far as the flexion of the elbow is concerned.

However, not infrequently a hematoma of considerable size is present, and I have seen Volkmann's ischemic paralysis occur following fixation in the flexed position without the application of any constricting bandage; merely the hematoma causing increased pressure and interference with circulation, and even at times involving the musculospiral nerve. I can best illustrate these points by the following case history:

A girl, 6 years of age, fell on the right elbow, causing a supracondylar fracture. Roentgenograms were taken before and after manipulation, and the surgeon felt that he had obtained satisfactory position, although he was concerned as to the circulation in the hand. The morning after manipulation, wrist drop was noted for the first time, and as there was considerable swelling of the elbow, forearm and hand, and ischemic paralysis was feared, it seemed advisable to allow the elbow to extend almost to right angles in order to relieve pressure. On the third day the adhesive was removed and a slough was discovered on the ulnar side of the forearm. Roentgenograms revealed that the lower fragments had slipped backward. It was deemed advisable to attempt further manipulation in the hope of maintaining reduction. The parents were advised that if this failed, open operation would be resorted to, as there was evidence of the presence of a large hematoma, musculospiral paralysis, possibly ischemic paralysis and a slough of the wrist. It was obvious that unless proper reduction was obtained, function of the elbow would be unsatisfactory. The arm was remanipulated and it was noted that as soon as full flexion was attained the circulation ceased. However, it was then put up in a well-padded half cast in the flexed position at about 65 degrees. Roentgenograms taken immediately after showed fairly satisfactory position, but the swelling of the forearm necessitated removal of the splint. Operation then was resorted to. A posterior incision was made, the hematoma evacuated, the fracture reduced, and two beef-bone screws placed throughout the condyles into the shaft to maintain fixation. Roentgenograms revealed perfect re-position, the child was put in bed with the elbow at right angles and the forearm suspended from an overhead frame. She was allowed to move the elbow as soon as she recovered from the anesthesia. The swelling subsided and recovery from the musculospiral paralysis was rapid. There was no evidence of Volkmann's ischemic paralysis. The child developed full flexion, extension to 160 degrees, and normal pronation and supination.

One of the most successful types of tendon transplantation operation is the tendon transplantation for musculospiral paralysis. The results are gratifying and I would recommend this procedure in all cases of permanent mus-

culospiral paralysis. We have never found it necessary to combine this tendon transplantation operation with arthrodesis of the wrist joint.

It has been our experience that when a diagnosis of tuberculosis of the knee joint has been established, and destructive changes are evident in the articulation of the joint, arthrodesis gives the quickest and most satisfactory result. The difficulty in the past in the successful treatment of tuberculosis of the wrist joint has been the long periods of disability, and it would seem to me to warrant early arthrodesis.

DR. ARTHUR STEINDLER (closing): Inasmuch as most of the points raised concern Volkmann's contracture, I beg to say that we have had sixteen cases as far as I can remember. Five had constricting casts and three had constricting splints, and there were several cases with neither. I do not think that 85 per cent are due to actual constricting casts. I think that the percentage is much too high. This contracture is often due, as Doctor Meyerding has pointed out, to hematoma, and especially hematoma following fracture of the lower end of the humerus.

In regard to a subdeltoid bursitis, the point has been raised as to differential diagnosis between tuberculosis of the shoulder and subdeltoid bursitis. It is difficult to differentiate the extra-articular lesions of the shoulder from each other—for instance, a subdeltoid bursitis from a strain of the subscapularis muscle or other muscle attached to the upper end of the humerus—but between extra- and intra-articular lesions I do not think there should be any doubt. The condition may not be immediately apparent upon examination of the patient any more than in the case of a patient with tuberculosis of the hip, because the pathognomic position is masked. The patient does not want to walk with his arm in abduction, but in the joint between the clavicle and sternum the joint is actually abducted, though the abduction is masked by motion in this joint. If you examine the border of the scapula you will find that while the arm is resting at the side of the body the vertebral border of the scapula is not parallel to the spine, but it has a slant which is commensurate to this motion and in this direction. Straighten out the shoulder blade just as you would straighten out the pelvis in hip disease, so that it will again assume normal relationship to the spine, and you will find that your arm will become abducted.

A CLINICAL AND LABORATORY STUDY OF HYPERTENSION*

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In the registration area of the United States (exclusive of Hawaii), approximately 400 people per 100,000 population die each year of chronic cardio-vasculorenal disease; 80 of these are said to

die of cerebral hemorrhage or apoplexy, 150 of organic heart disease, and 90 of chronic Bright's disease. This group of diseases causes almost three times as many deaths as tuberculosis (150 per 100,000); cerebral hemorrhage alone equals the mortality of all the pneumonias and is more frequent than all the malignant tumors (80 per 100,000).

The difference between chronic cardio-vascular disease on the one hand and primary renal disease on the other has often not been clearly defined, and much confusion has arisen in describing the pathology and symptoms of this group of diseases. We may for a good working basis recognize three principal large classes:

1. Athero-sclerosis (decreased or senile arterio-sclerosis)
2. Primary hypertension
3. Glomerulo-nephritis

In athero-sclerosis there are marked degenerative intimal changes of the blood vessels, scarring, and later calcification. "Pipe stem" arteries are of this type. The condition is associated with little or no elevation of the blood-pressure, and there is no cardiac hypertrophy. Degenerative changes of the viscera may occur because of interference with the blood supply, but more frequently the patients die of some acute infection. The kidney changes are secondary to thickening of larger arteries, which causes atrophy, contraction, and a very coarsely lobulated kidney. Renal decompensation may occur, but is rare. The patients rarely die of cerebral hemorrhage, but may develop cerebral thrombosis.

Glomerulo-nephritis is probably always secondary to some acute or recurrent infection and is characterized by marked proliferative changes and hemorrhages in the glomeruli, which degenerate, become hyalinized, with an associated secondary atrophy of the tubules. The urine is loaded with albumin, with a tendency to fixation of the specific gravity at a low level. Numerous casts and red blood cells are usually present. There is impairment of excretion of water and salt which is often associated with edema. Moderate or severe anemia is present. The heart is slightly enlarged and there is a moderate elevation of blood-pressure unless cardiac decompensation appears. The phenolsulphonephthalein test is decreased and the blood usually shows retention of urea nitrogen, uric acid, creatinin, and sugar, except in the very early stages. The fundi show edema and hemorrhages but little

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arterial thickening except where the blood-pressure has been elevated for a long time.

Arterial degeneration frequently follows prolonged elevation of blood-pressure. It is uncertain whether this is a compensatory process or whether it is due to the same noxious agent which causes the increased blood-pressure. The pathologists often have been able to demonstrate nothing but cardiac hypertrophy in the early cases, but later in the disease there is marked thickening of the media and intima of the moderate size blood-vessels and capillaries. Atheromatous changes may develop. Great strain is placed upon the vascular system and the heart. We have at first a cardio-circulatory and later a cardio-vascular disease. The renal changes develop only as a part of the secondary vascular changes and are not a constant finding in early cases. The three most common causes of death are cardiac decompensation, cerebral hemorrhage and less frequently renal insufficiency. Although the symptoms and findings are well known in the later stages of the disease little is known as to the etiology. Most of the functional tests have been applied to the later stages of the disease.

The material of this study was obtained from looking over our records in private practice; and about 95 per cent of the patients were ambulatory cases.

Cases were accepted as having hypertension after several groups had been excluded:

1. Temporary increase of blood-pressure due to excitement
2. Definite glomerulo-nephritis
3. Aortic regurgitation
4. Hyperthyroidism
5. "Senile" (decreased) athero-sclerosis

The blood-pressure readings alone did not always afford the best evidence as to whether the case had been one of hypertension or not. Myocardial decompensation often caused lowering of both systolic and diastolic pressures especially in the more advanced cases. The history and general examination were always taken into consideration. Any systolic blood-pressure persistently 150 mm. of mercury or above has been considered as hypertension. This is an arbitrary figure and may be disregarded when cardiac weakness is present. A small correction must be made for the age factor. Cardiac hypertrophy is always present except in temporary hypertension.

Out of 3,250 records, 205 were found to have so-called "essential hypertension," or 6.3 per cent. Thirty-two of the 205 cases might be classed as far advanced.

In the same number of records were found 70 cases of definite "senile" or descreascent athero-sclerosis (slight thickenings were not recorded). These have also been tabulated.

Twelve cases of glomerulo-nephritis were seen during the same period, which are too few for study.

Five hundred control cases, without hypertension, were chosen by taking the cases in serial number, distributed throughout the year.

The following studies were made:

A. Age and Sex. Chart I.

CHART I SEX and AGE

	Cases	Under 20		20-29		30-39		40-49		50-59		60-69		Over 70		Total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
HYPERTENSION	205	1	1	0	1	6	9	16	17	24	49	20	29	10	13	76	125
																36%	64%
ATHEROSCLEROSIS	70	2	0	6	0	5	1	6	4	9	9	13	7	8	1	48	22
																69%	31%
CONTROLS	500	17	27	47	63	65	89	80	60	24	22	12	6	5	2	210	290
																42%	58%

Several interesting points may be discussed:

- (1) The ratio of males and females is the same in hypertension and the controls. More women came to the office than men.
- (2) In hypertension, 21 of the 66 women between ages of 40 and 59 had marked symptoms associated with the climacteric.
- (3) Hypertension appears most commonly over 40 years of age. We saw many more controls under 40 years.

B. Family History. Chart II.

CHART II FAMILY HISTORY

	Cases	Apoplexy-Paralysis	Apoplexy, Heart, Kidneys
HYPERTENSION	205	46 or 22%	96 or 46%
ATHEROSCLEROSIS	70	6 or 7%	17 or 24%
CONTROLS	500	41 or 8%	127 or 25%

Apoplexy, heart and kidney diseases are much more common in hypertension cases.

C. Weight. Chart III.

CHART III. WEIGHT						
	Cases	Overweight	More than +10#	Norm +3#	Subnor	Not Stated
HYPERTENSION	205	128 (62%)	60 (30%)	14 (7%)	46 (22%)	17 (9%)
ATHEROSCLEROSIS	70	10 (14%)	3 (4%)	17 (24%)	43 (62%)	0
CONTROLS	500	70 (14%)	50 (10%)	185 (37%)	217 (43%)	28 (6%)

One hundred and twenty-eight cases were overweight; 60 were more than 10 per cent overweight. Of the 60 hypertension cases recorded as normal or subnormal, only 25 were probably "early" hypertension; but, 3 of this 25 had carcinoma, one advanced pulmonary tuberculosis, one esophageal obstruction, and seven general ptosis with malnutrition. The rest were advanced cases of arterial degeneration. Thirty-two of the 46 cases who were underweight had advanced vascular disease, myocardial, renal or other vascular changes causing interference with nutrition. Forty-three of the 70 cases of atherosclerosis were underweight, and only 3 were 10 pounds overweight.

D. Previous Diseases. Chart IV.

CHART IV. PREVIOUS DISEASES			
	HYPERTENSION	ATHEROSCLEROSIS	CONTROLS
Cases	205	70	500
Acute rheumatic fever, recurrent tonsillitis, endocarditis, chorea, otitis media	97(47)	11(16)	172(34)
Teeth - sinuses	53(40)	4(6)	139(28)
Gall bladder	34(17)	4(6)	22(4)
Typhoid fever	31(15)	5(11)	55(11)
Scarlet fever	26(13)	11(16)	80(16)
Abscess - sepsis	16(9)	1(1)	12(2)
Pneumonia	24(12)	7(10)	48(10)
Erysipelas	3	0	2
Syphilis	6	2	10
Diabetes	6	2	9
Colitis, chronic	4	2	0
Thyroid disease	4	0	2
Toxemia of pregnancy	2	0	0
No present infection	51(25%)	25(50%)	133(26%)
Infection not present and no history	11(5%)	20(30%)	71(14%)

In the 14 cases of athero-sclerosis under 40 years of age every one had had repeated infections and at the time of the examination suffered from multiple focal infection. Tendency of infection after forty was not great. The glomerulo-nephritis cases had had many infections and focal infection was usually present at time of examination. All were under 40 years of age except one, who was 43. In hypertension infection is slightly more common than in the controls, but the greater incidence is not enough to warrant conclusions.

E. Diet.

Eighty-five, or 41 per cent, of the hypertension cases were recorded as being heavy feeders. Twelve, or 17 per cent, of the senile cases were heavy eaters and two of these had diabetes. No relation could be discovered for alcohol, tobacco, coffee, etc., except that heavy feeders are likely to use more of everything.

F. Chronic Constipation.

Patients are so uncertain as to what is constipation that the study did not give any information.

G. Occupation.

There was no evidence of the part played.

LABORATORY STUDIES OF HYPERTENSION

A. Urine.

- (1) Faint traces or more of albumin were almost invariably found in repeated examinations of the urine.
- (2) Traces of sugar were occasionally found.
- (3) Hyaline casts, cylindroids, occasional cellular casts, occasional leucocytes (and rarely erythrocytes) were found at some time in all cases. Blood in the urine was not found in such quantities as in glomerulo-nephritis, except in cases of decompensation of the heart.
- (4) Concentration tests were employed in 120 of the cases. These were done either by the Mosenthal nephritic test diet, or by two twelve-hour specimens of urine, having patients take

fluids only at meals, or by taking the specific gravity of the urine of many specimens taken at different times of the day. The majority of the *persistent* hypertension cases show changes different from the normal. The patients with fluctuating blood-pressure did not, as a rule, show definite variation from the normal, especially in the cases which at rest had only a moderate or slight hypertension (low basal blood-pressure).

The abnormal types were as follows:

- a. Tendency to fixation of specific gravity at high level.
- b. Fixation at a low level (rare).
- c. Delay of excretion either (a) after meals, or (b) there was a nocturnal polyuria. There was no daily twenty-four-hour polyuria.
- d. No salt or water retention except in terminal cases and then probably cardiac in origin.
- e. The N_2 estimation of the urine is of little value because it takes several days to reach a nitrogen equilibrium on a constant diet.

B. Blood Chemistry.

The uric acid is usually slightly increased and the blood sugar often is at the upper border of the normal. Very early cases may show nothing. Creatinine and urea nitrogen are within normal limits. The Van Slyke shows no evidence of acidosis. In cardiac decompensation and terminal states there may very occasionally be an increase of retention bodies, but there is only rarely the failure of elimination as found in glomerulo-nephritis. This is due to the fact that most of the patients die of vascular accidents or cardiac decompensation, before the stage of renal insufficiency. The author has never seen in the ambulatory case any high grade retention, but has occasionally observed high values for urea, creatinine, and uric acid shortly before death in bedridden patients.

C. The phenolsulphonphthalein test is of little value. Many cases are normal or above. The cardiac factor is always a variable which is hard to estimate.

D. The routine blood examination usually shows in early cases no changes from the normal. A florid complexion is almost the rule except in the advanced cases with poor nutrition. Often there is evidence of some infective process, such as a leucocytosis, a high large mononuclear count, or stimulation cells.

E. Basal Metabolism.

The basal metabolism was estimated in 59 cases; 10 of 14 athero-sclerosis cases were normal or below; 44 were normal or above; several of the 15 cases of hypertension below normal were hypothyroid cases and responded to thyroid extract. A few hypertension cases were given Goetsch tests. The reactions were so severe that it was discontinued. The blood-pressure, pulse rate and ventilation were increased after adrenalin.

CLINICAL OBSERVATIONS

The clinical observations are as a whole well known, but I shall dwell upon a few observations which may need emphasizing.

1. The records show that the cases are usually florid, overnourished people provided that the cases are not far advanced.

2. For purposes of description, the cases may be grouped into three classes according to the stage of the disease.

Type 1. The blood-pressure is variable, very sensitive to nervous influences and exercise, but rest quickly lowers it. (Basal blood-pressure is low.) At this stage the palpated arteries are small, contracted, straight, and show little thickening. The heart shows slight enlargement to the left; the first heart tone is broadened and sometimes has a soft blowing murmur. The aorta shows little change by x-ray. The fundus examination shows dilated veins and contracted arteries. Rest, massage, vasodilators all give some good

results as far as the lowering of the blood-pressure is concerned. An occasional case showing signs of myxedema responds to thyroid extract.

Type 2. The blood-pressure is less variable, but still sensitive to outside influences. The arteries are definitely thickened and although small are a little tortuous. The heart shows further signs of the extra load by further hypertrophy and dilatation. The arteries and aorta both show increased apparent pulsation because of the worm-like movement produced by the straightening out of their tortuous course by the pulse tension. The "aortic knob" by x-ray becomes prominent because of the lengthened aorta and some enlargement. The fundus now shows tortuous arteries and veins, although the arteries are still of small calibre. White streaks lie down the center of the vessels and the arteries seem more pulsile, similar to the peripheral vessels. Treatment directed toward reduction of pressure is less valuable at this stage, but may prolong life. It is essentially directed toward protecting the heart.

Type 3. This is when the nutrition of one or more organs is markedly impaired, and insufficiency takes place. The arteries are hard or beaded inelastic tubes and the ophthalmoscopic examination shows marked interruption of the veins where the arteries cross. Some of these patients with calcified arteries may be those of hypertension in cases where there is an associated "wearing out" or senile decay of the arteries. The patients usually become pale and lose weight; often the blood-pressure has started to fall because of myocardial weakness. It may fall to normal or below, and if the patient is seen for the first time hypertension as the cause may be overlooked. However, the enlarged hypertrophied left ventricle without other cause is the record left of former cardiac overload.

CAUSE OF DEATH

1. Death may occur at any time due to rupture of blood vessels. Hemorrhages may be seen in the retina at any stage and are suggestive as to what may occur in the cerebral vessels.
2. Death may be due to lack of blood supply or proper nutrition to one or more organs.
 - a. Cardiac
 - b. Renal
 - c. Pancreatic
 - d. Nervous, etc.
3. Malnutrition due to improper nutrition of the body, and often complications, as pneumonia, etc.

DISCUSSION AS TO ETIOLOGY

One must be very careful about drawing conclusions, but there are several factors to which we might direct attention.

1. Family history. No doubt there is some hereditary predisposition, but its nature can only be suspected.
2. Faulty metabolism seems to play a part, as shown by the tendency to overweight, high basal metabolism, large appetites, and high uric acid values in the blood. Of course, the basal metabolism may be slightly increased by the overworking heart, and the increased uric acid in the blood to faulty elimination as well as overproduction.
3. Infections are very common in these cases and one would suspect that they may play a part; however, possibly people with hypertension are predisposed to infections, or the hypertension age is during a period when chronic infections are more common. This study has not shown that infections play any great part.
4. Vaso-motor spasm. The early stages of the disease seem to show conclusively that vaso-motor spasm plays a very important part as proven by clinical observations and treatment. In women this is especially noticeable near climacteric, when the vaso-motor system is so unsteady. Adrenalin greatly increases the symptoms in early hypertension. Thyroid extract or ovarian extract decreases symptoms in some cases and seems to lower pressure. The agent which causes the contraction and in what manner it acts is not indi-

cated by this study. Metabolic changes seem to be the most likely.

5. Plethora, viscosity, etc., have not been studied in this series.

COURSE AND TREATMENT

One hundred and forty-five cases have been under observation. Thirty-three of these have died. Nine died cerebral deaths; three of cancer; one of pneumonia and one of intestinal obstruction. The other fourteen cases died of cardiac failure. Twenty-two patients continuously had had a blood-pressure of 150-180, all except one of which died a cardiac death; three below 150 died of intestinal obstruction, cancer and cardiac failure.

It is very hard to make accurate observations as to treatment because in many cases more than one therapeutic measure was employed. Each case was thoroughly examined to determine the presence of infection, intestinal toxemia, endocrine gland disturbance; and the condition of the blood vessels, heart, and kidneys was noted. The personal habits of the patient were especially investigated. Any abnormal condition was corrected, if possible. In general, those cases which continuously had a hypertension with little or no variation did not respond to treatment except symptomatically. The heart should be supported and the patient kept within his limitations. The following measures were more frequently employed:

1. Mental rest. Mental rest is especially important and many of the results of any regime may be attributed to this or to suggestive therapeutics.
2. Correction of diet. There should be enough protein to maintain nitrogen balance and enough other food to maintain weight. Salt was restricted in recent cases.
3. Massage and baths, and physical exercise properly directed.
4. Venesection.
5. Drugs as nitrites, thyroid extract, iodides, and occasionally aconite.
6. Symptomatic treatment.
7. Removal of infections, especially focal infection, was always done when possible. Some of the early cases seemed to be benefited by removal of foci of infection and in a few cases relieved of hypertension over periods of three or four years. This may be due to

improvement of general health, and it remains to be seen whether there is a recurrence. In the later stages with definite arterial thickening, no effect upon the blood-pressure could be noted. Removal of the infections improves the condition of the patient, especially the myocardium, and often prolongs life. The patient is safer without the foci, but focal infection has been overstressed as a cause of hypertension.

Prognosis.—As a rule, those patients with blood-pressure of 200 or more are more likely to live a short time, because of obvious mechanical reasons. A failing myocardium, hemorrhages in the fundi or elsewhere, and marked cerebral signs are dangerous symptoms. Young people are likely to withstand extreme blood-pressure longer than patients over fifty years of age. Patients with a labile blood-pressure which returns to normal when at rest or responds to massage and vasodilators have a better outlook than those who are not affected by treatment. We have repeatedly seen temporary blood-pressure of over 200 return to normal for long periods. Many of the cardiac cases will gradually have a lowering of blood-pressure as the myocardium fails. Frequently this affects only the systolic pressure, but often the systolic and diastolic pressures return nearly to normal with increasingly embarrassed circulation. Undernutrition may bring about lowered pressure by weakening of myocardium, but in cases threatened with cerebral hemorrhage the low cardiac reserve thus produced may be the lesser of two evils.

Hypertension may run a course of twenty years or more, but more often the patient passes off very few years after it has been discovered.

DISCUSSION

Any conclusions from a statistical study are impossible unless thousands of cases are reviewed by scientific statistical method. We may, however, find certain indications for study and for treatment.

1. Hypertension most commonly occurs after forty years of age, although it may occur under twenty years of age.
2. Men and women are equally affected.
3. A definite family predisposition has been established.
4. The majority of the patients show evidence of disturbed metabolism.

- a. Overweight.
- b. Increased basal metabolism.
- c. Tendency to retention by the kidneys although this may be secondary to the arterial thickening.
- d. Infection past and present is probably more common in hypertension than in the average patient which comes to the office but then the incidence of hypertension is at an age when infection is common.

The cause of hypertension is unknown. However, the treatment of slight elevations of blood pressure is favorable, but late hypertension most probably results from some intoxication of many years' duration. Early cases should be carefully studied and all abnormal conditions corrected, whether hygienic, functional or toxic. It is the duty of the family consultant to carefully study all patients even with slight elevation of blood pressure and try to correct the possible underlying cause. Not only will the disease be helped or possibly cured before anatomical changes have taken place, but also data will be furnished to help solve one of the greatest problems in medicine today.

SHEPPARD-TOWNER BILL AS ADMINISTERED
IN MINNESOTA BY THE STATE BOARD
OF HEALTH—DIVISION OF
CHILD HYGIENE*

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In November of 1921, Congress passed the Sheppard-Towner Bill for the Protection of Maternity and Infancy in the United States. Shortly afterward they appropriated \$1,224,000 for carrying out the provisions of the bill. With some six exceptions the various states accepted the bill, and made the necessary arrangements for receiving the benefits offered by the federal measure. The Minnesota legislature accepted by law in April, 1921, and made the State Board of Health its agency in co-operating with the federal agency for the protection of maternity and infancy.

This law, by its application, makes itself more

or less directly the concern of every physician. The law was the direct result of a very vigorous agitation on the part of the newly enfranchised women to correct a condition that was considered to be of vital importance. The earnestness and persistent interest of those who secured its passage and instigated its acceptance in our state must be borne in mind. They were convinced that the excessive maternal and infant deaths in our country should be lessened.

The fact that the law with which their demands were answered by Congress made no provision for "material aid" of any sort is tremendously significant. It offers only instruction and advice. It may be considered to imply that there exists a condition which should be corrected, and that the means for correcting it are at hand. These means are the knowledge of obstetrics and pediatrics existing in the medical profession. Since the means already exist, the law offers a method of letting the people know of these means and so, again by implication, urges them to make use of them. It is in the proper use of existing knowledge that the first advances must be made. All instruction and all advice in matters of maternity and infancy must be directly or indirectly referred back to the medical profession and any material benefits which may come to those looking for aid must come only through the time-honored relation of patient and physician.

The program of the Division of Child Hygiene is indeed largely a series of measures through which a closer and more mutually helpful relationship between physician and patient may be established. It is for this reason that the State Board of Health is so anxious that the organized profession in Minnesota should know of the purposes the Board has in mind in its work in the Division of Child Hygiene. The profession is aware that the public has before it an increasing assortment of self-appointed agencies for the dispensation of that priceless thing called Health. So insistent and appealing are the claims of these agencies that there is a growing confusion in the minds of many people as to whether health is to be gotten by such means as are taught in our medical schools, by the various schemes of the occasional prophets continually arising, or by the more subtle offices of the mind whereby ill-health is simply not recognized or else is dispelled by the repetition of potent phrases.

Before taking up the program of the Division of

*Presented before the Southern Minnesota Medical Association at Mankato, December, 1922.

Child Hygiene, I should like to mention a few points in the report of the Joint Committee of the American Gynecological Society and the American Child Hygiene Association on Maternal Welfare. I mention these to indicate how even a program drawn up by expert obstetricians is largely dependent upon the co-operation of an educated public:

1. Preservation of life and health of the mother
 - a. Decrease infections following childbirth and abortion
 - b. By providing better trained attendants
 - c. By educating the laity as to the proper preparation and necessity for proper supervision during pregnancy, etc.
 - d. Control of toxemias

In their other recommendations in the field of stillbirths, premature births and neonatal deaths, the necessity of co-operation with an informed public is no less evident.

Of the 348 puerperal deaths in Minnesota in 1920, 41.9 per cent were due to sepsis and 23.2 per cent to puerperal albuminuria and convulsions. Thus 65 per cent of puerperal deaths were due to causes largely preventable.

In the field of infant mortality the chief factor is the deaths during the first month of life. There are three main causes of infant death: (1) the neonatal group including congenital malformations, prematures, congenital debility, and birth injuries; (2) the digestive system disease group; (3) the respiratory group. During the five-year period from 1916 to 1920, there has been a definite yearly *decrease* in the number of deaths due to digestive and respiratory causes; whereas there has been an equally definite yearly *increase* in the first group. To this group should be added the equally large group of stillbirths.

The situation in the United States as a whole parallels that in Minnesota. "Together, the stillbirths and deaths of infants under one month account for the death of more than 200,000 children. These deaths are more in number than those from tuberculosis and all of the infectious diseases combined except influenza and pneumonia.

"The remarkable fact about this enormous loss of life is that little has been accomplished in the recent decade or two in controlling it. Infant mortality, *after* the first month, has been reduced one-half, through such work as better feeding and care

of babies. But the stillbirths and early infant deaths stay just about where they were fifteen or twenty years ago. The record of even the past five years shows no substantial improvement. In 1916, 4.3 per cent and in 1920, 4.2 per cent of the babies live-born in the United States registered area died before they reached the age of one month. This high mortality figure seems to be fairly constant for the several economic levels of the population, and only slightly lower in rural areas than in the cities."

It is obvious that the prevention of such deaths depends first and foremost upon the careful supervision of patients throughout the period of pregnancy and upon the intelligent seeking for and use of such supervision by the patients themselves.

The same principles apply later in the field of child hygiene. The necessity of breast feeding, of proper diet for the preschool and school child, of medical attention to the underweight child and the backward child—these demand the same intelligent co-operation between an informed public and the physician.

It is with these ideas in mind that the program of the Division of Child Hygiene was drawn up and it is these ideas which inspire the application of the measures of the program to the state.

PROGRAM OF DIVISION OF CHILD HYGIENE OF MINNESOTA STATE BOARD OF HEALTH

1. Correspondence study course in the hygiene of maternity and infancy to be offered the women of the state through the Extension Division of the University. This course consists of fifteen lessons and will be given weekly. The subject matter is similar to such courses given in several other states and consists in a review of the principles of hygiene with the need of proper medical supervision throughout pregnancy, together with a description of various measures by which the patient may help herself in the proper preparation for confinement. Over 700 women are now taking this course.

2. Establishment of "Mothercraft" classes in the schools of the state. These classes, already established and enthusiastically received in several schools, take up the care of the baby—its food, clothing and management.

3. A system of prenatal letters to expectant mothers is prepared in which the progress of normal pregnancy is briefly outlined and the necessity of proper prenatal care and observance of proper

hygiene is emphasized. Six hundred women receive these letters each month.

4. A model obstetrical package has been prepared at a cost price of \$2.00 including everything necessary for a normal confinement in the home. A canvass of physicians precedes any attempt at installing this package for use in any community. In most instances, the doctors have welcomed it, while in a few, where hospital facilities have been adequate, there was no need for it. Where the physicians wanted it, arrangements were made and are being made for the preparation of the outfit by local women's organizations who finance it and sell it to those needing it.

5. A considerable number of pamphlets on maternal and child hygiene are distributed throughout the state by Public Health nurses, in answer to requests by letter and at fairs and Public Health meetings.

6. The division has a Superintendent of Public Health Nursing, Miss Ruth Houlton, who keeps in touch with all Public Health nurses, chiefly to aid them in maternal and infant work, but also to provide a clearing-house for general information on nursing subjects. In this work she co-operates with the University School of Nursing, with the Children's Bureau of the State Board of Control and with the Minnesota Public Health Association.

7. The division has two field nurses who co-operate with the county nurses in matters of practical instruction to mothers in preparation for confinement, care of infants and children, etc.

8. The division has a Ford touring car equipped with a generator to operate a motion picture machine. This is used by the field workers in their demonstrations to groups.

9. The Superintendent of Nurses acts as a placement bureau for Public Health nurses throughout the state.

10. The division has planned a program for a typical rural community in which to demonstrate in some detail a scheme for adequate maternal and child hygiene. Nobles County was chosen. It is hoped that an intensive utilization of local facilities, together with such aid as the State Board of Health may offer, will give results which may then be duplicated in other counties.

An effort has been made, in the organization of the division from an administrative standpoint, to insure a close co-operation with local communities. This organization is as follows:

1. *A State Advisory Board* consisting of 9 members, as follows:

The President of the University

A member of the State Board of Control

The President of the Minnesota League of Women Voters

A member of the Minnesota State Medical Association

The Secretary of the Northwestern Pediatric Society

Executive Secretary of the Minnesota Public Health Association

Chairman of the Public Health Section of the Minnesota State Registered Nurses' Association

SECRETARY OF THE STATE PARENT-TEACHERS' ASSOCIATION

Their duties are to suggest and advise the State Board of Health in its program and to aid in securing co-operative action through the agencies represented by its members. Its support at all times has been active and valuable.

2. *County Administrative Boards:* Following the endorsement of the State Advisory Board there has been formed in each county a board of five members consisting of

County Health Officer

County Commissioner

Physician

Two women members

Its duties are to plan and supervise the administration of maternal and infant hygiene in the counties, subject to the provisions of the Federal and state laws and to the regulations of the State Board of Health.

The personnel of this board with its two medical members insures the program against the intrusion of measures contrary to accepted practice, while the two women members insure that same enthusiastic support which put the bill through Congress and gave it to Minnesota. We have been assured of this support by all the state-wide women's organizations.

The chief thing which this system assures is the local administration of local problems. They will be given every aid which the State Board of Health, through its various divisions, may offer, but the responsibility is local, as is the problem.

Before closing, I shall review briefly just what the Sheppard-Towner bill offers to Minnesota:

First: It provides that over a 5-year period the

sum of \$1,240,000 shall be appropriated for use among the various states. It has actually appropriated this amount, however, for only one year ending July 1, 1923. Federal appropriations are annual; state appropriations are biennial.

Second: Of this amount Minnesota may receive:

1. \$16,099.65 on a population basis, if matched by an equal appropriation from the state
2. \$5,000, if matched by the state
3. \$5,000, given outright

By a very liberal interpretation of the law, Minnesota was able to obtain, without a state appropriation, almost its maximum amount under the law for the current fiscal year. The board has been assured, however, that unless Federal funds are actually matched by appropriations by our state legislature, no further Federal funds will be available to Minnesota. The continuance of the Division of Child Hygiene is thus dependent upon an appropriation by the coming legislature.*

Such funds as may be available are to be used solely by the agency appointed for the administration of the law. The funds are not intended for division among the counties, or other state organizations.

DISCUSSION

DR. H. F. HELMHOLZ, Rochester: The object of this bill is to promote the welfare and hygiene of maternity and infancy. Is there a need for such a bill? The statistics that Doctor Hartley has given us and the common knowledge that the deaths from childbearing are greater from twenty to thirty-five years than from any other cause, with the exception of tuberculosis, indicate the need of welfare work. Secondly, we know that the deaths in infancy during the first month of life are one-third of the total deaths under one year. There can be no doubt whatsoever that there is very important work to be done in the hygiene and welfare of maternity and infancy. The question arises as to whether the United States is trying to "put something over" on the States. By reading one section of the bill, I believe I can convince you that it rests entirely with the States whether or not they take part in this Act.

"Sec. 8.—Any State desiring to receive the benefits of this Act shall, by its agency described in Section 4, submit to the Children's Bureau detailed plans for carrying out the provisions of this Act within such State, which plans shall be subject to the approval of the Board; provided, that the plans of the states under this Act shall provide that no official, or agent, or representative, in carrying out the provisions of this Act, shall enter any home or take charge of any child over the objection of the parents, or either of them, or the person standing in loco parentis or having custody of such child. If these plans shall be in conformity

with the provisions of this Act and reasonably appropriate and adequate to carry out its purposes, they shall be approved by the Board and due notice of such approval shall be sent to the State agency by the chief of the Children's Bureau."

The government agencies are anxious and willing to go as far as they can in promoting this work. They are anxious for each state to carry out this work in an original manner, so that the best method of procedure may be discovered.

With regard to the relationship of the State to the local community, the Board is so arranged that it is entirely up to the local community. The Board consists of the County Commissioner of Health, a member selected by the County Medical Society, and a member of the Board of County Commissioners; two women nominated by a local committee are appointed by the state committee. So there are three members, independent of any state control, to work out any plan that a particular community may be interested in, and it seems to me that the working out of this bill is of tremendous importance to the medical profession. We have an opportunity here, such as we have not had before, to educate the public in matters of health. I feel that it is of great importance that we, as a profession, realize our delinquency in this respect. I do not think there is any question but that our reticence and backwardness in getting into public work are responsible for the various cults that at the present time are our competitors. We have been loath to get out in public and educate. We have felt that it was beneath our dignity, and unethical. It seems to me that it is time that we realized that only by educating the public can we overcome this serious setback.

Moreover, medicine is gradually becoming a matter of prevention rather than of cure; this appeals to me in particular as a pediatrician. Our work in the past ten years has changed tremendously. Ten years ago no parent brought a child to the physician for examination to make sure that nothing was wrong. Today, I venture to say that the greatest part of the work a pediatrician has is in preventive medicine. Older patients are also becoming interested in preventive measures. A man comes to the doctor and tells him he wants to be examined, and to be told what to do to increase his span of life. That is education, and it is in this great educational plan that the medical profession ought to take its part.

THE INTERRELATION OF GYNECOLOGY AND UROLOGY*

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Minneapolis

The close anatomical relations between the lower urinary tract and the reproductive organs of the female give rise to many interesting problems in the diagnosis and treatment of what the patient com-

*The legislature appropriated \$15,000 for each year of the biennium 1923-24.

*Read before the Clinical Club of Minneapolis, December 21, 1922.

monly terms "female trouble." The symptoms and signs of pathological processes in one tract are not infrequently so closely related to those of the other tract that a very careful study must be made before the practitioner can begin a corrective treatment with reasonable expectation of successful results. Indeed the therapy in many cases must include treatment of diseased organs in the two systems. We cannot separate urological diagnosis in the male from the diagnosis of genital lesions and this is likewise true in the female. The mere fact that the urethra and vagina have separate openings in the vestibule does not relieve us of the necessity of investigating both tracts in the diagnosis of pelvic disease.

The proximity of the external urethral meatus and the vaginal introitus permits easy invasion of one tract by infecting organisms from the other. The anterior vaginal wall is in close, more or less neighborly, relation with the urethra, paraurethral ducts, base of the bladder and lower ends of the ureters. Internal disease of cervical tissue elements often involves the border regions, causing serious disturbances of the urinary system at the lower ureter and bladder areas.

The physiological changes of the genital organs during menstruation, coitus and pregnancy have their bearing on the urinary tract as have variations in the size and pressure of the bladder on the reproductive organs. Pelvic congestion during menstruation, sexual excitement and pregnancy sometimes causes and frequently aggravates urinary symptoms. The enlarged pregnant uterus limits the size and shape of the bladder. The position of the normal uterus varies considerably with the amount of urine in the bladder. Knorr in a series of 3,213 gynecological patients found 20.6 per cent complaining of vesical symptoms and of these 15 per cent had actual bladder disease. Sutton in a recent study of a large number of cases of vesico-sigmoidal fistulæ found that the most frequent cause of this condition was inflammatory disease of the uterine adnexa. Every practitioner knows that a gonorrheal infection in the female means trouble in both genital and urinary organs in the vast majority of cases.

The traumatic injuries occurring during childbirth that formerly left such a broad trail of distressing conditions difficult to remedy, are, thanks to the more efficient obstetrical teaching in our medical schools, now leaving a narrower trail not so easily followed by the scent of urinary leakage.

However, the more daring activities of the pelvic surgeon, attacking, as he now does, many serious conditions formerly considered beyond the help of surgery, leave a certain number of results that test the ingenuity of urologist and gynecologist. To the gynecologist the most embarrassing of all traumatic injuries are fistulæ leading from the urinary tract into the genital tract. It is in these cases that a careful urological examination provides an accurate survey of the site of injury and of the tissues available for plastic repair. Urological treatment in the preliminary as well as the postoperative care of the patient adds materially to the success of the operation. In the treatment of vesico-vaginal fistulæ the urological examination is particularly applicable as the surgeon is limited in his activities by the position of the ureters and in addition he has no desire to close a badly infected bladder. Again in cases of uretero-vaginal fistulæ the urological examination determines the type of operation required for relief, whether it is necessary to perform a nephrectomy or whether the kidney is worth trying to save by ureteral repair, anastomosis or transplantation. All types of genito-urinary fistulæ demand some urological investigation.

A cystic tumor presenting in the anterior vaginal wall may be a cyst, suburethral abscess, urethral diverticulum, bladder diverticulum, urethrocele or cystocele. Sometimes a catheter in the bladder and a microscopic examination of the urine are sufficient to clinch the diagnosis. It cannot be too strongly emphasized that a catheterized specimen of urine for microscopic examination is of primary importance in the differential diagnosis of certain of these cases.

The pathological processes under discussion may be considered under three heads: first, urological signs and symptoms caused by disease of the genital organs; second, gynecological signs and symptoms caused by disease of the urinary organs; third, co-existing affections. In making these divisions we refer to the primary seat of the disease.

UROLOGICAL SIGNS AND SYMPTOMS CAUSED BY DISEASE OF THE GENITAL ORGANS

Pyuria generally points to a disease of the urinary organs alone, but there are cases in which the disease is due to gynecological disease primarily. It is well to emphasize again the importance of a careful microscopic examination of a catheterized specimen of urine if pus is found in a voided specimen. Another important point in the

examination is to centrifugalize the specimen obtained, examining the sediment immediately, with both the high and low power lenses, and to dry and stain a portion of the sediment. Bacteria can be seen in the fresh sediment but a stained smear is much better for this purpose. A third item of importance in the diagnosis and treatment of urinary infections is a culture from the urine. The normal bladder urine does not contain polymorphonuclear leucocytes or erythrocytes. The finding of clumps of leucocytes is not necessary for the diagnosis of pyuria. Pyuria may be caused by rupture into the bladder of an adherent pus tube, a pelvic abscess, an infected sac of an extrauterine pregnancy, an infected ovarian cyst, an infected myoma, an adherent loop of bowel, or an invading malignant tumor of the reproductive organs. In all of these conditions there will usually be a secondary general cystitis. I have observed two patients in whom pelvic abscesses had ruptured into the bladder. In one of these cases the urinary examinations were of unusual interest as the first specimen contained only a few leucocytes; the following day a specimen was creamy with pus and two days later the urine was macroscopically clear. This intermittent pyuria continued for several days and was not interrupted by the drainage of a huge pelvic abscess through the vagina. At autopsy a few days later it was found that one pocket of pus which had not been drained at operation was connected with the bladder by a small opening. It is also of interest that there was almost no cystitis present.

The consideration of hematuria likewise necessitates a catheterized specimen of urine. The common gynecological cause of this sign is the invasion of the bladder by malignant tumors of the genital organs. Dr. W. W. Keen reported a case of periodic hematuria following an operation which he performed for a huge vesico-vaginal fistula. His operation closed the vaginal introitus, thereby making the vagina a urinary cistern and actually a part of the bladder. This patient passed all of her menstrual discharges successfully for many years through the urethra.

Pneumaturia due to gynecological disease follows inflammatory or malignant disease of the reproductive organs which has destroyed a portion of the wall of the intestine and of the bladder as well, with the resulting entero-vesical fistula.

Dysuria is a frequent symptom in pelvic inflam-

matory disease and may be entirely relieved after the gynecological condition has been corrected. This symptom frequently occurs in extrauterine pregnancy, especially after so-called tubal abortion, rupture or in advanced gestation. I assisted at an operation performed on a negro woman who had been treated more than a year for vesical irritation which proved to be due to five feet of four-inch iodoform gauze encysted between the bladder and uterus where it had been visiting for five years. Dermoid cysts are prone to become adherent to surrounding structures, and, as they are often anterior to the uterus, they occasionally rupture into the bladder, filling it with an irritating substance which causes cystitis, even when uninfected, of chemical or foreign body type. Fetal bones of an abdominal pregnancy sometimes work their way through the bladder wall and cause all the symptoms of foreign bodies in the bladder.

Pollakiuria is present in the same conditions which cause dysuria and is often present without painful urination, especially with a normal pregnancy or a large tumor limiting the normal capacity of the bladder.

Strangury is a symptom found with certain pelvic tumors which press upon the urethra and bladder, and in some cases of large inflammatory masses, and occasionally is caused by a badly fitting pessary.

Incontinence of urine always calls for a gynecological as well as a urological investigation. Injury of the vesical sphincter during labor frequently produces partial incontinence and sometimes complete incontinence. In the first instance this usually coexists with cystocele and in the second instance vesico-urethro-vaginal fistula is an almost constant companion. Injury of the vesical sphincter followed by temporary or permanent incontinence may be due to coitus intraurethram, urethral masturbation and intraurethral digital examination.

Acute retention of urine or the chronic type with residual urine may be caused by lesions of the genital organs such as tumors of the vulva, vaginal wall, uterus, or ovaries. I have seen one patient in whom a myoma of the uterus had completely shut off the urethra, causing an enormous distention of the bladder followed by intraperitoneal rupture of the viscus, causing general peritonitis and death. Not infrequently one sees patients suffering from myomata uteri who are able to empty their bladders only when lying down. Patients with large cysto-

celes often have residual urine and many discover that the protrusion from the vulva must be pushed up with a finger before they urinate freely. Stricture of the urethra occurs due to scars from obstetrical trauma and healed ulcers of the vaginal wall and vulva. The obstruction may be partial or complete and sometimes causes very serious injury to the kidneys.

Hydronephrosis with or without infection is caused by stricture of the ureter from without, by inflammatory processes in the broad ligaments and by encircling growths such as carcinoma of the cervix and adenomyoma of the cervix and rectovaginal septum, and by pressure on the ureter of large pelvic tumors, and occasionally by the pregnant uterus.

Pain in the bladder or urethral regions may be the only symptom of diseased pelvic organs. Careful urological examination in some of these cases shows nothing abnormal but there is usually some pathological process found, often mild and secondary to the pelvic disease.

GYNECOLOGICAL SIGNS AND SYMPTOMS CAUSED BY DISEASE OF THE URINARY ORGANS

In the diagnosis of pelvic disease the surgeon cannot ignore the urinary organs with any less danger of embarrassing consequences than during an operation in this region. A tumor in the pelvis is usually due to some disease of the reproductive organs but it is well to remember that large ovarian cysts have been known to disappear through the agency of a catheter in the bladder. In considering any cystic tumor of the lower abdomen it is necessary to rule out a distended or hypertrophied bladder. The large bladder tumors, diverticula, stones, foreign bodies and blood clots in the bladder can be felt on bimanual examination. Tuberculous ureters and ureter stones can be felt lateral to the cervix and either anterior or posterior to it. Among other tumors in the pelvis we occasionally feel a kidney which may be normal except in its position or may be affected with any pathological process that organ is subject to. Tumors of the anterior vaginal wall generally involve the urethra and bladder. Cystocele and urethrocele are the most common of these but suburethral abscess and urethral diverticulum are confusing unless a careful urological examination is made.

Dyspareunia and vaginismus are often due to urethral caruncle and to inflammatory diseases of the urethra, bladder and lower ureter.

Many patients suffering from the continuous nagging and often severe prolonged pain and distress caused by an elusive ulcer of the bladder (described by Hunner) have been subjected to multiple pelvic operations without improvement. In these cases the bladder may be reported normal after cystoscopic examination and the physician feels that some slight displacement of the uterus or other minor abnormality of the reproductive organs is the cause of the symptoms. Operations follow one after another until all the pelvic organs have been sent to the laboratory, leaving only possible adhesions to explain the continuation of the distressing symptoms.

Pelvic pain and tenderness are caused by stricture of the ureter in some cases although unoffending ovaries generally bear the blame and take the brunt of the first attack.

Backache in women falls in the field of almost every specialty but we wish to emphasize the fact that, even when present in a marked degree, retrodisplacement of the uterus frequently has no bearing on the cause and not infrequently the kidney is the offending organ.

CO-EXISTING AFFECTIONS

The most prolific agent of co-existing affections of the genito-urinary organs is the gonococcus which causes disease of both tracts from the vulva to the ovaries and from the urethra to the kidneys. The predominant symptoms may be genital or urinary but the majority have symptoms pointing to both tracts. Tuberculosis or syphilis may present co-existing lesions but in these diseases there is the larger problem of general systemic infection. A single luetic or chancroidal lesion may injure both tracts either during the active process or by the scar tissue after healing.

In closing we shall draw your attention to the frequent urinary complications of pregnancy, labor and the puerperium. The pollakiuria of early and late pregnancy is in most cases to be regarded as physiological but this fact does not relieve us of the responsibility of keeping a careful lookout for pathological causes.

Pyelitis of pregnancy always demands careful attention not only during pregnancy but later when it is necessary for the physician to assure himself that there is no disease remaining. Some obstetricians believe that many of these cases are merely exacerbations of a chronic pyelitis. If such be the case pregnancy will not be apt to cure the patient

of this disease. It is certainly true that many patients with chronic pyelitis date the onset of the trouble to a previous pregnancy.

Hydrourter and hypdronephrosis without infection are caused by the pressure of a pregnant uterus. We do not know how often this may occur but autopsy has proven that certain pregnant women dead of another disease have also hydrourters and hydronephrosis unsuspected by the clinician.

During delivery an empty bladder is insurance against cystocele and vesicovaginal fistula. In the puerperium we must guard against a distended bladder and not be misled by paradoxical incontinence.

CONCLUSIONS

Gynecological and urological signs and symptoms are, in a considerable percentage of cases, confusing and frequently require careful study of both the reproductive and urinary systems before a correct diagnosis can be made and intelligent treatment carried out.

Pathological lesions primary in the reproductive organs may directly or indirectly cause serious disease of the urinary system.

OBSTETRICS OF 1,000 CASES, AS SEEN BY A COUNTRY PRACTITIONER*

AUGUST KUHLMANN, M.D.

Melrose, Minnesota

In my seventeen years of practice I have attended over 1,000 cases of confinements. This speaks for itself: that the people in the locality where I practice are not affected seriously by the gospel of birth-control.

The reason perhaps is that the community is largely Catholic. The Catholic church in its dogmas is strongly against all teachings and practices of artificial birth-control, unless very vital reasons obtain.

All my cases of confinements have been home deliveries.

FORCEPS

In this series of cases I had four cases delivered by aid of the forceps:

Case 1. A multipara, with five children. She had been in labor for two days, attended by a mid-

wife. She showed marked varicosity, a flabby abdomen and apparent uterine inertia.

From vaginal examination I found complete dilatation of the uterus, an L. O. A. presentation, but the pains were not strong enough for the head to pass the pubic bone. Under ether anesthesia, with the aid of forceps, the child was delivered in ten minutes. A slight tear was repaired and recovery was uneventful. Pituitrin was not given on account of the marked varicosity of the vulvæ and vagina, for fear of hemorrhage.

Case 2. A primipara of a highly neurotic type, with all the immediate excitable surroundings, such as the nervous mother, husband, sister-in-law, etc. During the last month before maturity I was called thirteen times at night. She was always complaining about pressure symptoms and believing the event was coming off.

I found her in a good condition with an L. O. A. presentation. The husband and attendants always seemed to have more pains than the patient. Labor finally did start. After a day and a half of annoying watchful waiting and little sleep, when there was fair dilatation of the cervix I gave pituitrin—an ampule in three doses at one-half hour intervals and ether during the pains.

The surrounding attendants considered the case desperate and asked for consultation.

With the consultant we decided on immediate forceps delivery. He advised small light forceps. The forceps slipped and a complete rectal tear was the result.

We applied stronger forceps and the child was delivered and lives. The tear was immediately repaired but turned out after a week to be unsuccessful. Two weeks later I called in a surgeon but we had poor results. I lost the case.

Three months later another doctor operated; still the fistula remained.

Of importance to mention in this case is that the woman did not develop fever during the whole course of proceedings. She has had another child since, with a lacerated perineum, without trouble.

Cases 3 and 4. These two patients were delivered by the use of forceps on account of uterine inertia without trouble following.

ECLAMPSIA

In the series of one thousand cases I have had two cases of eclampsia, with all the annoying symptoms. It is peculiar that both cases happened to come in the same year.

*Read before the Southern Minnesota Medical Association at Mankato, December, 1922.

Case 1. This patient was a primipara. She had marked albuminuria, convulsions and hallucinations. The case was treated as usual with dieting, diuretics, sedatives and sudorifics to encourage elimination in the hope of carrying the woman to full term.

The case became critical at seven and one-half months pregnancy. Labor was induced by rapid dilatation under ether anesthesia. The fingers and hand only were used for dilatation. A living child was delivered by podalic version. The child lived for one day.

It took three weeks with the care of two nurses for the mother to come out of her dreams. She has had two children since without trouble.

Case 2. A multipara, thirty-eight years old: a neurasthenic, with eight children. She had convulsions and symptoms of insanity. At the sixth month of pregnancy she became uncontrollable and a podalic version was done, using the fingers and hand only for dilating the uterus.

Under the usual treatment and the constant care of a nurse she recovered.

PLACENTA PREVIA

Case 1. A primipara, at the sixth month of pregnancy. She had a severe hemorrhage, with no let-up after giving a morphine and adrenalin hypodermic.

I packed the vagina but the hemorrhage continued. The pulse became critical. Under ether anesthesia the uterus was dilated with the fingers and hand and a rapid podalic version was performed. A living child was born but died the sixth day. The mother had an uneventful recovery.

Case 2. A multipara, thirty-eight years old. I was called at the third month of pregnancy for severe hemorrhage. An hypodermic of morphine did not stop the hemorrhage. I packed the vagina and the hemorrhage stopped. I ordered her to bed for a week. Hemorrhage returned at certain intervals but it was readily checked by complete rest in bed for several days.

The woman was carried to a full term and a dead child was born.

Case 3. A multipara, with six children, aged 35. She had been feeling unusually well during pregnancy until a month before maturity. Under the advice from a midwife she remained in bed for three days and bleeding stopped entirely. A week before maturity, while in the field husking corn, in a squatting position, she had another hemorrhage

with some pressure symptoms. On examination I found some dilation of the uterine cervix for two fingers to pass.

There was a boggy mass presenting itself which could be pushed slightly sideways and I concluded it to be placental tissue. The hemorrhage stopped after an injection of morphine and atropine. I remained all night for labor pains to set it, but all pressure symptoms had stopped. I left her with the instructions to stay in bed and if pains or hemorrhage should start in again to send for me immediately.

After a week she got real labor pains and a normal delivery of a nine-pound boy was the result. The placenta showed plainly at the margin where it had been sunk into the uterine cervix.

In antepartum hemorrhages, when interference is indicated, podalic version is my choice; especially if a person is alone, because with a few dishes of an antiseptic solution and two to three sterilized gloves a person can keep clean.

In doing a podalic version where I got hold of one leg only I broke the femur of the infant in two cases by hooking my finger in the groin for the extraction of the child with the second femur flexed.

I do not like to do damage in the uterus and it is sometimes difficult to get both feet to do the version, because there is not much time to be lost for checking hemorrhage.

I had no bad after-effects in both cases of the broken legs. I put the leg in a hanging position with a pulley and weight, using a bee-hive or a store box, for the infant's bed. The child can thus be nursed without taking it out of the bed. The bones heal readily in three to four weeks.

RUPTURE OF THE UTERUS

Fifteen years ago when pituitrin first came into use, it was advocated to give a full ampule for a dose. I had been using it in several cases where labor was slow and tedious with marked results. I considered it a great boon to save some sleep for the doctor and hurry up labor to get the woman out of her misery.

Case 1. A multipara, aged 40, with five children. She had profuse varicosity of the vulvæ and vaginal parts.

L. O. A. presentation and a fair dilatation of the uterus. The pains were coming slowly and I injected an ampule dose into the abdominal muscles, as I had done in previous cases. The pains came

fine and strong. Just twenty-five minutes after the injection the child was born.

Right after the child was delivered a gurgling sound was heard and the blood just shot out. I extracted the placenta and packed the uterus but the woman died inside of thirty minutes. Since that time I have been very cautious with pituitrin and moderate the pains with ether.

POSTPARTUM HEMORRHAGE

Case 1. A multipara, aged 42, seven children. A midwife case; adherent placenta. This was a hurry-up case, six miles out in the country, sixteen years ago. The woman had been bleeding profusely with a retained placenta. The woman insisted upon an anesthetic. I gave chloroform and extracted the placenta. The uterus contracted well, the bleeding stopped, the patient rallied and everything looked well when I left.

Just about two hours after I left her, I got another hurry-up call and when I arrived the woman had expired. She apparently had died of syncope.

The woman had been ailing all through pregnancy. I did not treat her before. Whether I am right or wrong, I have never given chloroform since.

PUERPERAL SEPSIS

I had two deaths from puerperal sepsis. Both deaths occurred in the year 1921, in cases following influenza.

Both cases were in unusually clean houses, clean surroundings and all usual precautions were apparently observed.

Case 1. Multipara, aged 40, eight children. The patient complained all through pregnancy of pain on the right side. Labor was more painful and tedious than in the previous births.

The child was born without the aid of instruments or unusual interference. Special care was taken regarding asepsis. She lost more blood than usual after the placenta was delivered, but nothing alarming. She felt fairly well up to the third day, when she had a chill and high fever, and died the seventh day. She got two doses of antistreptococcic serum and the usual treatment of sepsis.

It may be of interest that a woman friend released from a smallpox quarantine had been visiting her regularly, and she was still full of pox and peeling.

Case 2. A multipara, thirty-eight years old, with six children, in an unusually clean house. She had been ailing all through pregnancy.

The child was born without trouble. She had a profuse hemorrhage before the expulsion of the placenta, which had to be taken and proved to be adherent.

After giving one dram of ergot and five minims of pituitrin, bleeding continued. I had to pack the vagina and bleeding stopped. For two days she felt fairly well. On the third day, placing the baby from one side to the other, she got a severe pain in the side. The day following she passed a big clot of blood. I gave ergot. Although she claimed she had no chill, she developed fever and died the ninth day.

TRANSVERSE PRESENTATION

A multipara with a large, flabby abdomen. She always had a midwife, but, as happens, they sometimes get stuck. Three times I had to do a podalic version for a transverse presentation, without any after-trouble to mother and child.

Once the midwife had delivered one child, but another followed (twins), with an arm and shoulder presentation. I could not return the child on account of the contracted uterus. The child was asphyxiated, because the midwife had been pulling for quite a while on the arm to get the child. In this case I did a decapitation, with a curved Mayo scissor, close to the *foramen magnum* of the skull. I pushed the neck of the child between my two fingers as guards and cut through the neck close to the skull, then locked one finger into the os and extracted the head. I had no difficulty to extract the body by the arm. Uneventful recovery of the mother.

MASTITIS

Prevention of mastitis is best, by treating sore nipples and keep the chest covered up warm. I advise wearing a proper nightgown that covers the chest and breasts. If there is an inflammation I have them put on ichthyol ointment, cover well with cotton, have the milk pumped out every two hours and give a good laxative.

Four cases I had to open and drain. All got well.

NAUSEA AND VOMITING

I never had to terminate labor for nausea and vomiting. Two cases looked almost hopeless, but after persistent treatment for a month they became normal. The worst case of nausea and vomiting was a primipara at the second month of pregnancy. She could not keep anything down. I tried cereum oxalate, adrenalin, nux vomica, alkalies, morphine

and atropine, cocaine. I washed out the stomach, gave enemata and douches, and painted the cervix with cocaine solution.

We tried malted milk, predigested food, butter-milk, but nothing would stay with the stomach.

Tincture of iodine in five-drop doses, three times a day, checked her for a week. For a whole week I gave her nothing by mouth—not even water; she received only nutrient enemata.

The woman was in an hysterical condition and the case became desperate. She and her husband had shortly moved here from Missouri. I advised her to go home to her folks when she was able to do so. The next day they had their automobile ready and they made the trip without any trouble, in three days. She had not eaten anything by mouth the week before their trip.

This was a psychic case. Later I got a card announcing the birth of a boy.

The other case had lost thirty pounds within a month, but regained the loss rapidly later.

TWINS

In this series there were eight pairs of twins and two children were lost. One perhaps could have been saved if help had been there in time (a mid-wife case).

TRIPLETS

One case—three girls of seven pounds each. All were attached to one placenta. The mother nursed all three on the breast for two weeks. There was no particular trouble.

MONSTER

One case—in a girl; illegitimate. The mass delivered looked more like a dog than a human figure. I did not get the name of the father.

INTRAUTERINE DEATH

Three cases. All were carried past maturity. No particular trouble to the mothers. Labor was induced in two cases. One child showed a good crop of smallpox. The mother had smallpox about the sixth month of pregnancy. Labor started spontaneously.

MENINGOCELE

Three cases. All were born alive. One died the first week, the other in the second week and the third lived up to the fourth week. In the last one I advised an operation, but the parents objected.

ICTERUS

In one family, three children died of icterus the

first week after birth, apparently healthy at birth. The first-born in the family lives.

CLOSED ANUS

One case. I wanted to operate the next morning but it was a weak child and died during the night.

ROUTINE

I. *Preparatory*

1. Wash up.
2. Sterilize gloves and scissors.
3. Wash vulva with a lysol or iodine solution.
4. Clip off abundance of pubic hair.
5. Wash again with a lysol solution.
6. Make a vaginal examination with sterile gloves, then an external abdominal examination.
7. Order a light meal for the patient and cheer her up.
8. Prepare bed with newspapers.
9. Keep all troubles away from patient; and if there is any prepare for it in a quiet, orderly manner.

II. *Third Stage*

1. Wait for pains. Do not hurry!
2. Have ergot, gloves and pituitrin ready.
3. In some cases I keep my hand over the uterus to watch contraction.
4. If pains come, I instruct patient to press down steady by aiding with mild pressure of my hand above, and mild traction with the other hand on the cord.
5. Ergot—clean up—and quiet patient.
6. Light diet.
7. Bowel movement the second or third day.
8. Keep in bed nine days.

CONCLUSIONS

1. To be sterile and clean is the first essential in obstetrics. I never make a vaginal examination without sterilized gloves.
 2. Watchful waiting (patience and good judgment) is the second essential.
 3. Although we country practitioners would like to have better facilities, to have the patient in the hospital instead of in the home, this will remain an economic problem. Naturally, most of the women want to stay at home because the home is their kingdom and the average family can not afford the hospital fees.
 4. Since we doctors get all the abnormal cases of the midwives, the doctors get the credit for signing the death certificate.
- Therefore: For a true estimation of the mater-

nal death rate, we must figure in the normal cases of the midwives, which, with mine, I figure at 1,500.

Hence: The maternal death-rate of four cases in 1,500 would show me a frank maternal death-rate of three in one thousand. (This would have been below *two* in one thousand if I had not had the fatal years of 1920 and 1921, after the influenza.

DISCUSSION

DR. W. H. CONDIT, Minneapolis: I had no conception of what Doctor Kuhlman was going to give us today, but he surely is to be congratulated on his success and good record. He has covered the whole subject of obstetrics from beginning to end, so I do not know where to begin. There are two or three points that I wish to magnify. In the first place, in the use of forceps, their use is more often abused. I think he has not abused them by any means. Perhaps he has been a little too conservative, and he probably would have had more pleasant results and saved himself sleep and his mother's pain had he used them a little more often. I would surely use forceps before pituitrin, and I think the doctor will after his experience. It is a dangerous drug, and so many of our animal extract drugs are absolutely unreliable. They may be over-strength or neutral, so we have no conception of the active strength of our gland extract drugs when we obtain them for use.

In his premature labors, Doctor Kuhlman speaks of having quite a little unpleasant waste of time and sleep. We find that the automobile is becoming a tremendous menace to the comfort of the physician especially, and also I think to the mother. They are pretty near ready to forego anything for the sake of a trip in an automobile. We instruct our patients that we absolutely forbid their getting into a motor during the third, seventh and last month. They can take that as they please, and 99 per cent will not follow it. Motoring in the last month starts up false labor, premature pains and premature rupture of the membranes. We have just had a patient in the hospital who went into labor for seven hours; they called me and I thought she would be delivered in twenty minutes. I had been there about five minutes when the pains ceased. She went home for a week, returned for three days, and then went home again for four. She had been riding in automobiles constantly for the past month. This had constantly irritated the uterus and she had had continued pains for two weeks before the hard pains began; thus the uterus muscles were absolutely worn out. After absolute rest in bed for a week those little pains would subside. When she would move in bed or get out of bed the pains would start. We must consider automobiling as liable to irritate the uterus, or cause emotional miscarriages—for instance, just missing hitting a child while driving, riding at night in a storm and just escaping having an accident, etc.

The doctor has made a mistake surely in trying to repair the pelvic floor two weeks postpartum, or even two months postpartum. These tissues are not in condition to repair from surgical interference for less than four months, and no

attempt should be made to repair, except at time of delivery, unless hemorrhage or some emergency requires it. There are more mistakes made in attempting to repair the pelvic floor too soon postpartum than are ever made in postponing it. They can be repaired two years later with far better results than they can in two months, and especially two weeks postpartum.

The question of toxemia of pregnancy today is second to none, unless cancer, and why?—because we know absolutely nothing of it, and it is such a tremendously big subject that I cannot possibly touch on it. But I just had two illustrations of the diagnosis of the country physician, where one was a comedy of errors and the other was a most definite compliment to a country physician for recognition of the patient's condition. He put her in his automobile and drove in forty-five miles to the hospital. She had a blood pressure of 260, pulse 144, and was on the verge of convulsions. She had had an operation for exophthalmic goiter eight years previous and had a little exophthalmos still, but the urine was practically solid albumin—what we call plus 5 where plus 4 is dangerous. We did a vaginal hysterotomy about two hours after her admission. It was simply miraculous how she improved. The albumin disappeared, there being only a trace at the end of thirty-six hours. Her blood pressure went down to 172, but it came up again, and when discharged from the hospital the day before yesterday it was 180. She probably has a chronic hypertension and always will have. She is a girl of twenty-five. There a life was saved because the doctor recognized that woman's condition. He had seen her twelve days before and was unable to take her blood pressure. He did do a test for albumin and found it solid in the tube or glass. He put her on a milk diet for twelve days with instructions (which she did not follow), but when the emergency came he took care of her. This is a compliment to the man and a life was saved.

Now here is the comedy of errors. A woman, aged 43, whose youngest child was 2½ years and the next 12 years old, was diagnosed as pregnancy with placenta previa. She was sent into the hospital for delivery. The consulting physician examined her and said there was no pregnancy, but a myoma, for which he urged operation. She had had a little menstrual irregularity—what I would call menopause bleeding. I happened to be called in consultation and found a normal uterus and recommended examination under anesthesia. This woman had nothing but a little irregularity, thought she was pregnant, and went to the doctor, who confirmed it, and she went on to the eighth month fully believing that she was pregnant.

Just a word on nausea and vomiting. If the doctor had put the patient to bed and given forty to sixty grains of bromid per rectum with starvation for the first twenty-four hours and light feeding thereafter, this would have checked the nausea and vomiting. I don't care whether it is hysterical or toxic, and all the oral administration of drugs and attempts at dieting outside of starvation are absolutely nil. I have used as high as 300 grains a day.

This is surely as paramount a subject as is before the public today, and I think even more so than cancer, but we must educate the medical profession before we go too far with the laity.

CEREBRAL PNEUMOGRAPHY AS AN AID IN THE EARLY DIAGNOSIS OF HYDROCEPHALUS*

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Cerebral pneumography or the injection of air into the lateral ventricles of the brain, followed by the taking of x-rays, was first introduced by Dandy of Baltimore in 1918.

This diagnostic procedure is of aid in the following conditions:

1. In determining type of hydrocephalus.
2. Localization of intracranial tumors.
3. Localization of spinal cord tumors.

This paper will deal only with the uses that we have made of the procedure in cases of hydrocephalus. At a later date the work will be presented which has been done along this line in the localization of cerebral and spinal cord tumors.

There are two general types of hydrocephalus: (1) external hydrocephalus; (2) internal hydrocephalus.

Internal hydrocephalus is subdivided into two classes:

1. Obstructive internal hydrocephalus.
2. Communicating internal hydrocephalus.

The so-called idiopathic hydrocephalus, the causes of which have been so admirably presented by Dandy, of Baltimore, is no longer recognized since cerebral pneumography has been brought into the diagnostic field.

The technique of ventricular injection is the same for any case of hydrocephalus which presents itself whether it be external or internal. The child is given gas anesthesia and after the head is prepared a spinal puncture needle with a two-way cock is injected through the open fontanel into the lateral ventricle. If the sutures or fontanels are closed then a trephine opening must be made and the lateral ventricle punctured through this opening in the skull. The plunger is then withdrawn and 15 to 25 c.c. of cerebro-spinal fluid is withdrawn into a Luer syringe and an equal amount of air is injected. This process is repeated until no more fluid can be obtained with the head in this position.

Then the head is rotated so that the anterior horns of the ventricles will drain and this fluid is likewise removed. The same is done for the posterior horns of the ventricles. One must be very careful during this procedure to make sure that he does not produce a greater intracranial pressure than that which he found. In other words he must keep a delicate balance between the amount of cerebro-spinal fluid withdrawn and the amount of air injected.

In our cases we have experienced no untoward results and have replaced as much as 1,500 c.c. of cerebro-spinal fluid with air at one sitting.

As soon as this step has been carried out the patient is then removed to the x-ray table and plates are taken both flat, stereoscopic and oblique.

The interpretation of the plates differentiates between external and internal hydrocephalus. If one is dealing with a case of external hydrocephalus then surgical intervention is not warranted. If, on the other hand, one is dealing with a case of internal hydrocephalus, then the type of internal hydrocephalus must be determined.

It is now an accepted fact that cerebro-spinal fluid is produced in the ventricles of the brain. Dandy and his co-workers proved that nearly all absorption of cerebro-spinal fluid takes place in the subarachnoid space of the cerebral hemispheres. If, therefore, the cerebro-spinal fluid can not reach the subarachnoid space due to an obstruction either in the ventricular system or anywhere along the cerebro-spinal fluid vascular system, internal hydrocephalus results. If the obstruction lies in the ventricular system the obstructive type of internal hydrocephalus is produced. If it lies in the cisternæ or in the main branches of the cisternæ the communicating type of internal hydrocephalus is produced. In congenital hydrocephalus of the obstructive type fifty per cent of the lesions lie in the aqueduct of Sylvius. The ventriculogram then presents this picture: Dilatation of the third ventricle and both lateral ventricles. The operative procedure in this type of case is as follows: The patient is placed on the table with special frame, face down and prepared for a bilateral cerebellar decompression. The decompression procedure is carried out in the usual manner. The vermis is then raised by a spatula; a fine catheter is then introduced into the foramen of Magendie, passed through the fourth ventricle and into the aqueduct of Sylvius until the obstruction is met. A small sound is then passed up to the obstruction and

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forced through it into the third ventricle; fluid at once escapes and communication between the third and fourth ventricles has been established. Larger sounds are then passed through the opening until it will admit a small catheter, which is left in position for two or three weeks. The anterior part of the tube projects into the third ventricle; the posterior part is in the fourth ventricle and lies on the pons and medulla. It is anchored by silk ligature to the dura at the foramen magnum. The nuchal muscles are carefully closed over the wound, giving a good protection of tissue over the large foreign body which is deeply buried, and is free from skin infections during its abode in the brain. It is hoped that the epithelium of the aqueduct will regenerate, form a new canal, and thus establish circulation of the cerebro-spinal fluid.

The other type of obstructive hydrocephalus with which we have to deal is that in which the foramina of Luschka and Magendie are occluded. The above mentioned foramina drain the cerebro-spinal fluid from the fourth ventricle into the cisterna magna. Therefore, when we have this condition existing we get ventriculograms which present dilatation of the lateral ventricles, third ventricle, aqueduct of Sylvius and fourth ventricle. This definitely locates the point of obstruction. The majority of such cases, in fact nearly all of them in infancy, are the result of an old inflammatory condition producing adhesions and exudate which caused the obstruction, hence before we can operate them we must determine how much of the subarachnoid space is still patent and able to carry on its function as a part of the cerebro-spinal vascular system. This can be demonstrated in one of the following ways.

1. Inject 1 c.c. of phenolsulphonaphthalein into the spinal canal; if over 30 per cent of it is absorbed in two hours then a cure can be expected if the cause is removed.

2. Inject air into the spinal canal, take x-rays in the usual manner and if you are able to visualize the cerebral sulci over the greater part of both hemispheres, then a cure can be expected, and operation is justified. The operative procedure is the same as for reconstruction of the aqueduct of Sylvius. In one of the cases which is on demonstration very dense scar was encountered at operation. The fourth ventricle was markedly dilated, the walls being very thin. The fourth ventricle was punctured and an opening of considerable size was made, thus forming a new foramen of Magendie

and establishing circulation of the cerebro-spinal fluid between the fourth ventricle and the cisterna magna. It is hoped that this newly formed foramen will remain patent and thus prevent further development of the hydrocephalus.

Communicating hydrocephalus can be diagnosed in one of three ways:

1. Injection of phenolsulphonaphthalein into the ventricle and if it appears in the spinal fluid in thirty minutes then you know that you are not dealing with an obstructive hydrocephalus.

2. Inject phenolsulphonaphthalein into the spinal canal and if less than thirty per cent is absorbed in two hours you are dealing with a communicating hydrocephalus of rather severe grade.

3. The best way to determine is by the injection of air into the spinal canal and pneumographic plates made. If the cerebral sulci cannot be outlined over the cerebral hemispheres then the case is one of communicating hydrocephalus, and offers no relief from surgical interference.

External hydrocephalus likewise contraindicates surgical intervention.

In regard to the localization of brain tumors by means of ventriculography it can be stated that when possible it should be done in every case where there is a reasonable doubt. It will oftentimes more definitely localize a tumor and likewise will localize tumors in silent areas of the brain. The work of Dr. Corbett and myself in regard to brain tumors we hope to present at some future date.

In this work the surgery has always been done by Dr. J. Frank Corbett. The technique of the operative procedure is that used by Dr. Dandy of Baltimore. It is to him we are all indebted for the splendid research work that he has done in this field of neurological surgery, and the application of it to human surgery.

Conclusions:

1. Cerebral pneumography or ventriculography is a most valuable aid in the diagnosis of intracranial conditions.

2. It definitely differentiates hydrocephalus into two types:

- A. External hydrocephalus.

- B. Internal hydrocephalus.

3. It further differentiates internal hydrocephalus into two classes:

- A. Obstructive internal hydrocephalus.

- B. Communicating internal hydrocephalus.

4. It definitely localizes the lesion in obstructive hydrocephalus.

5. It is our guide to surgical intervention in these types of cases.

6. Cerebral pneumography is a great step forward in neurological surgery.

DISCUSSION

DR. K. IKEDA, Minneapolis: Dr. Wyatt has covered the essential points of the technic so far as the x-ray is concerned. From what I have done personally, which is very little, and from what I have read, particularly, of the work of Dandy and others, I have come to the following conclusions:

1. The interpretation of shadows, such as dilatation of the ventricles, distortion, distorted outlines, and the point of obstruction can be made by this means of diagnosis.

2. All cases of obscure cerebral conditions, unless otherwise indicated, should be subjected to this method of diagnosis. I think at first we should do spinal puncture and try to introduce air through this means, which is less risky than the other route, and then according to the result of this we may further go into the ventricle through the cranial vault.

3. The fluoroscope should be used in addition to plates. I have a case particularly in mind where the plate was taken in the ordinary way and did not show the presence of fluid, but when we fluoroscoped the patient we found fluid waves, and with the patient in the upright position we could notice the fluid level. In addition to plating, the fluoroscope should be used. The technic is rather difficult, especially going through the brain, and should always be done by a neurologist or brain surgeon.

I think these methods should be more extensively used than we have done so far.

DR. A. W. ADSON, Rochester: The subject of cerebral pneumography or ventriculography is attracting considerable attention, and while certain observers are enthusiastic concerning its value, others are inclined to ask questions. If pneumography is to be of real value, certain things must be accomplished by this procedure. The procedure is not altogether simple, because it is attended with risk. If it is of real value, how often will it localize a tumor when all other neurologic means fail? How many tumors can be found and removed as a result of pneumography? How many patients can be cured by the removal of such tumors? How many times will pneumography prevent a hazardous operation that might result in death? There are four frank questions to be answered before pneumography is considered a safe and sound procedure.

I have done a number of ventriculograms, which have assisted in localizing brain tumor, but very few have been removable. Hydrocephalus has been mentioned by Dr. Wyatt, but the question arises, what is to be done with hydrocephalus after it is found? In the first place, the procedure Dr. Wyatt referred to with dilatation of the aqueduct and the insertion of a catheter, leaving it for a time and then removing it, is not altogether satisfactory. I have tried it. It is a hazardous operation, and the fatalities are numerous. If pneumography is to be of real

value, it must be the means of diagnosing operable tumor. Pneumoperitoneum received a good deal of enthusiasm at one time, but today it has been largely discarded. Pneumography does localize tumors, but whether or not it localizes operable growths, time alone will tell.

DR. F. E. B. FOLEY, St. Paul: I think the results up to date in the treatment of what was formerly called idiopathic hydrocephalus warrants continued experiment with such a procedure as pneumography. The making of a definite diagnosis and localization of the lesion which is responsible for the condition is the *sine qua non* of treatment. Up to the time of Dandy's work no well organized plan was established in the treatment of hydrocephalus. Dandy has many ventriculograms which definitely localize the points of obstruction, and they have warranted the surgical procedures which followed. In several cases the results have been good.

I have had only little experience with ventriculography or pneumography. It was very difficult to demonstrate the passage of air in the subarachnoid spaces up over the hemispheres. The explanation of this is that hydrocephalus of long standing results in a flattening out of the whole cerebral cortex against the dura, and the small fluid-containing spaces are almost entirely obliterated. Under such circumstances the small amount of air which passes into these spaces may be impossible of demonstration in a plate.

I have done some work with the injection of hypertonic salt solution into the blood stream for the reduction of intracranial pressure. If a very highly concentrated salt solution is given intravenously, the osmotic disbalance causes a large amount of cerebro-spinal fluid to pass into the blood stream. Not only does the salt pick up fluid from the subarachnoid spaces where fluid absorption normally occurs, but it picks up a large amount of fluid from the ventricles and from the fluid-containing spaces of the brain substance, thus enlarging the fluid spaces over the cortex. If this procedure can be combined with pneumography, it seems to me our chances of demonstrating open spaces over the hemispheres would be very much greater, particularly in cases where the air injection is made into the spinal subarachnoid. The cortex would be separated from the dura, and the subarachnoid spaces would be thus enlarged. If there is no obstruction around the base to prevent the passage of air to these spaces it ought to be much easier of demonstration than is the case when the cortex is flat up against the dura.

DR. O. S. WYATT, Minneapolis (closing): In regard to what Dr. Adson had to say, our experience with the localization of brain tumors by pneumography has been very limited. We had the good fortune to have had Dr. Hamilton go over most of the cases with the results that brain tumors are quite well localized. Just how much one can say of the operability of brain tumors, after localizing them by pneumography, is no doubt only in the beginning. I think the investigations of Dandy have stimulated this work very materially.

In hydrocephalus, a point brought out by Dr. Foley in regard to the cerebral hemispheres being pushed tight against the dura, I will say that one is not able to visualize air in the subarachnoid spaces. That is quite true. The

reason for that is that these cases of hydrocephalus are so far advanced. If these patients came early, as soon as there was a suspicion there might be any condition of hydrocephalus due to the signs and symptoms that are manifested, the injection of air in the early cases of hydrocephalus would enable us to pick up more of these cases, and visualization over the cerebral hemispheres would be of much more aid.

EPILEPSY—ITS PRESENT STATUS*

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The subject of epilepsy is one which well merits the attention and consideration of every practitioner of medicine today. Occurring as it does, in all walks of life, among all classes of people, and in all varieties of environment, it is a disease which we should be prepared to recognize and to treat.

The common conception of epilepsy dates from a time when we were accustomed to consider the symptoms as the disease. Anyone who suffered attacks of unconsciousness was said to be an epileptic. Investigation and experience have taught us that convulsive attacks formerly considered "epilepsy" may be due to other diseases—and that epilepsy itself may exist without convulsions. What was formerly termed "epilepsy" we now realize may occur in general or localized cerebral disease. Brain pathology has taught us that in general paresis, multiple sclerosis, brain neoplasm, cerebral syphilis, arteriosclerosis, lead poisoning, alcoholism, uremia and diabetes, convulsive attacks may occur which from a symptomatic standpoint are identical with those of true epilepsy. Therefore, we rightfully conclude that we must find for *true* epilepsy some symptoms other than the mere occurrence of fainting or convulsive attacks. From a diagnostic angle, therefore, we have come to place more importance upon the psychic and mental phenomena which occur and upon the permanent changes which are characteristic of true epilepsy.

The purpose of this paper shall be not to discuss the subject in full but the present status of *essential epilepsy* and to refer to the other forms briefly, from a standpoint of differential diagnosis.

Curschmann defines idopathic epilepsy as "a chronic, usually progressive disease of the brain, the main symptom of which is a disturbance of

consciousness, appearing suddenly and in the form of attacks; together with, in the majority of cases, a gradual transformation of the entire psychic being." Another writer has more tersely defined it as "An explosion of accumulated energy."

The disease manifests itself in three types of attacks:

1. Grand mal—in which the patient suffers the classic attack, with loss of consciousness, falling, convulsive seizures and the associated symptoms.

2. Petit mal—in which there is only momentary "lapsus menti" or merely a transient dizziness, without falling or other disturbance.

3. Epileptic equivalent—in which the disturbance is psychic, not sensory-motor, and which manifests itself in a change of personality—one form of the so-called "dual" personality.

For purpose of convenience, we shall discuss each type separately, though the treatment for all is the same.

1. *Grand Mal*.—The attacks of grand mal may occur rarely or often, may be nocturnal only or always occur in the day time, or both. They may come on suddenly without any warning, or there may be definite prodromal symptoms. In this latter case, the patient is said to have an "aura." By aura is meant a definite feeling or sensation which tells the patient that the attack is coming. This takes various forms. It may be a hot flush passing over the body; or a flash of bright colors before the eyes; or the smelling of a peculiar odor. Aura occurs in only a small percentage of cases, and where it does occur it lasts for only a few seconds immediately preceding the attack. One peculiarity is that the aura, if it occurs, is almost invariably the *same* before each attack in the same individual. Immediately following the aura, if it occurs, or, if not, without any warning whatever, the attack comes on suddenly. The individual loses consciousness, falls prone, wherever he is, often injuring himself severely. All the muscles of the body are gripped in a tonic convulsion. The weird epileptic cry which many patients give at the beginning of an attack is due to a tonic convulsion of the respiratory muscles. The jaws are tightly locked, often with the tongue between the teeth, resulting in the common symptom of bitten tongue. Every muscle of the body is rigid, the eyes are open and staring, the legs and arms extended, with the hands clenched and the thumbs in the palms. The head is retracted and frequently the eyes are drawn

*Read before the Barron-Polk-Washburn-Sawyer-Burnett Counties Medical Society at Spooner, Wisconsin, March 6, 1923.

to one side. This stage lasts from fifteen to thirty seconds and is followed by a brief period of relaxation before the clonic muscular convulsions begin. In this period of relaxation the sphincters are also released and involuntary discharges of urine, feces and semen may occur. The period of clonic convulsion lasts from one minute up to ten or fifteen. During this stage there are convulsive movements of flexion and extension in the limbs; the trunk is thrown back and forth, the face is distorted and grimacing, the lips are covered with froth which is bloody if the tongue has been bitten and there are gurgling and choking noises in the throat due to the respiratory muscle clonus. The entire body usually perspires freely at this stage. Frequently injuries occur, due to the violence of the convulsions. Gradually the attack ceases, the patient becoming conscious at once or passing into a state of deep sleep which may last several hours. Frequently the individual recovers consciousness not knowing that anything has happened. A characteristic feature is the feeling of exhaustion and drowsiness which follows the attack. This is due to the tremendous expenditure of energy which occurs during the spell. It is often a diagnostic point of paramount importance.

It is interesting to note that reflex changes occur during the epileptic seizure. Cutaneous reflexes are lost, knee-jerks frequently are absent and you may get even an ankle clonus and a positive Babinski sign. The pupils are dilated. These findings, however, are not of practical value, as the epileptic spell is usually an emergency affair and one does not pay much attention to the examination of reflexes.

In severe types of the disease there may be repeated attacks of grand mal occurring one after another in rapid succession without an interval of consciousness. Such a condition is called "status epilepticus" and is of graver import than the single spell and always threatens the life of the patient from cardiac paralysis resulting from exhaustion. Death in the single attack, except from injury in falling or smothering, does not occur.

It is desired to emphasize the fact that in a true epileptic spell of the grand mal type, there may be *any* or *all* of the above named symptoms. The bitten tongue and the occurrence of involuntaries are the two most common events. However, they may not be present, and a diagnosis may be made merely upon the *sudden* loss of consciousness with some convulsive movements followed by the ex-

treme tired feeling or the period of sleep. In other words, it is not necessary to have all the classic symptoms in order to make a correct diagnosis of essential epilepsy.

2. *Petit Mal*.—Attacks of petit mal type show themselves in many different ways—varying from momentary attacks of vertigo to transient lapses of consciousness lasting only for a few seconds and of which the individual himself is ignorant. The patient often complains that he suffers from just an instant of dizziness with a slight mental confusion. Or he may complain of a queer feeling, with various subjective sensory disturbances such as numbness or tingling or a hot flush, affecting some parts of his body. Or, his friends may notice that during a conversation or while at the table eating he will suddenly stop, stare blankly into space for a few seconds and then go right on as though nothing had happened. In cases like this the patient himself is not aware of the attack. One of my patients, a school girl of fourteen years, who went to and returned from school in the street car, complained that often she would be carried by her street while on the car. She would remember being nearly to her street and then the next thing she knew would find that she had been carried two or three blocks past—and yet she was unaware of any period of blankness or of the occurrence of any spell.

These attacks may come only occasionally or very frequently. It is not rare to find them occurring as frequently as 150 in one day. Any history of recurrent little attacks, of vertigo, or queer feeling or mental confusion should always arouse suspicion of petit mal.

A person may suffer from this type of attack alone or he may suffer from alternating attacks of grand mal and petit mal. In others the disease may first show itself by petit mal attacks and later develop grand mal or vice versa. Or one may have both, and either one disappear, leaving the other.

A peculiar and puzzling feature is that the prognosis for response to treatment in petit mal is not as good as it is in grand mal. Also, the tendency to mental deterioration in the former is greater.

3. *Epileptic Equivalent*.—By far the most interesting phase of essential epilepsy is that type known as "epileptic equivalent." Here, instead of a sensory-motor manifestation, we have a psychic one. We find periodic attacks of dual personality, during which the individual moves about and conducts himself normally for hours or even days, but with

no consciousness of his real self. I can best illustrate my meaning by citing one or two typical cases.

Case 1. A young man of thirty years, a returned soldier under my observation, suffered from periodic attacks of typical grand mal epilepsy. He complained that occasionally he would be in a store on Wabasha Street and would suddenly find himself some where down below Jackson Street without knowing how he got there. During an interval of fifteen or twenty minutes he was essentially "unconscious" and yet had picked his way safely through crowded streets and across dangerous crossings. While under observation at the hospital, attendants were instructed to watch for these attacks. Several occurred. On one occasion he left his room, went down onto the street followed by the attendant who permitted him to walk a block or two, then gently took him by the arm, turned him about and led him back to the hospital. When he came to himself shortly afterward, he remembered nothing that had occurred. A peculiar fixed, blank look on his face was the only noticeable change in his appearance during the attack.

Case 2. A Minneapolis business man, a jeweler, aged 55, for several years had annoyed his family by disappearing for a few days. No one knew where he went or what happened during these occurrences. He was a man who was clean and straight and whose character and motives were absolutely above reproach. He consulted my partner, Dr. Hammes, about these attacks. Just before we saw him he had had the first attack in several years, the description of which he himself gave, as follows: He went to the bank one afternoon to deposit his day's funds; he remembered making the deposit, turning away from the Teller's window and putting his pass-book in his inside coat pocket. The next he knew he came to himself two days later in the middle of the High Bridge in St. Paul. What he does and where he goes during these attacks remains a mystery.

Case 3. A young man of about 28 years, whom I saw three years ago in consultation for the U. S. Veterans' Bureau, had an epileptic history. He disappeared from his place of employment and came to himself several days later many hundreds of miles away and found that he had acquired a wife, whom, in his real self, he did not know. This history was given as *bona fide* by his brother who accompanied him at the examination.

Case 4. Dr. Riggs reports a case of a man referred to him by a St. Paul physician several years ago. This man was a traveling salesman and while on his trips on the road would have spells for two and three days at a time during which he would sell goods, discount notes and make contracts without any errors whatsoever, though the transactions were a complete blank to him when he came to himself.

The above four cases serve to illustrate "epileptic equivalent." Its existence is unquestionable. Two years ago, at a clinic I gave on epilepsy during our St. Paul Clinic Week, I was severely criticised by one of the visiting physicians, for admitting that such a phase of the disease existed. His criticism was that it could be used by criminals as an alibi for their acts and that a clever criminal lawyer could secure acquittal on the ground of "epileptic equivalent." To me this seems a childish argument, as it involves no more than the everyday question of "sanity or insanity" in criminal acts.

As to the pathologic tissue changes in epilepsy, there is very little to say except that there is no definite fixed pathology. It has been said by some (Apert & Tracy) that there is always present "a sclerosis of neuroglial tissue" and "an induration of the interstitial tissue of the nervous centers"; a so-called "progressive gliosis" which takes a high power of the microscope to see. Aside from this, there is nothing to say.

The prognosis in epilepsy should always be made with the greatest caution. There are several factors which enter into it, namely, the age of the patient, the hereditary trends and the rapidity with which mental degenerative changes take place. The younger the patient the more grave the prognosis. The early appearance of mental changes always means a bad outlook. Epilepsy may occur at any age. It may appear during childhood but is most common in its appearance from the age of puberty up to twenty-five or thirty years of age. Idiopathic epilepsy beginning after the age of forty is rare and the initial appearance of "spells" at that age should arouse suspicion of an organic disease, although I have had one patient who never had an attack until after his fiftieth year, and who has them periodically at intervals of about six months. I have made every known examination and test in this man and they have all been negative, so it is apparently a case of essential epilepsy.

When we discuss the question of heredity, we touch upon a subject which has been extensively studied and concerning which there are a great variety of opinions. One thing is certain—that epilepsy occurring in an individual in whose family there is epilepsy or any mental disease offers a much graver prognosis than where the family history is clear. The actual transmission of epilepsy itself from one generation to another does not occur but there is transmitted an hereditary unstable nervous mechanism which renders more likely the occurrence of any mental or nervous disease. Chronic alcoholism, especially on the paternal side, is unfavorable, as is also hereditary syphilis. An epileptic mother is usually free from attacks during pregnancy. Thus we see the importance of an accurate family history in these cases.

Epilepsy attacks males oftener than females, in the ratio of 9 to 7. More men recover and do so earlier. Attacks occurring in the daytime usually recover better than those occurring at night.

Complete recovery probably occurs in about 10 to 14 per cent of epileptics. By recovery is meant cessation of spells, without recurrence when treatment is discontinued, and with a normal mental condition. The greater percentage of the remaining unrecovered cases respond well to treatment; in others the frequency of attacks is substantially reduced.

During the past three and a half years, it has been my privilege as Consultant for the U. S. Veterans' Bureau and as Attending Neurologist at U. S. P. H. S. Hospital No. 65, in St. Paul, to observe and treat a great many epileptics. The number of our soldiers who returned as epileptics with perfectly clear personal and family histories is astonishing. The only explanation I have to offer is that this is the result of individuals with an inherently weak and unstable nervous mechanism being suddenly subjected to the tremendous strain of military training in time of war. But, as a result of my experience in treating these men, I feel that we can offer a favorable prognosis in arresting or decreasing the attacks. The actual cures are few. Where mental deterioration has begun, the outlook is positively bad.

In the differential diagnosis in epilepsy, we have to consider: (1) Organic brain diseases or constitutional diseases in which epileptiform spells may occur. (2) Hysteria and hystero-epilepsy.

In the first group fall brain tumors, brain ab-

cesses, brain or skull injuries, syphilis, alcoholism, arteriosclerosis, drug poisonings, uremia and diabetes. The differential diagnosis is made in the usual way, by very careful physical and neurological examinations, including complete urinary examinations, blood examinations, including Wassermann tests if indicated. If it seems advisable the spinal fluid is examined and also the backgrounds of the eyes. A very careful personal history and description of the spells is necessary, as well as a complete family history. As was said earlier in this paper, if the onset of epileptiform attacks begins after the fortieth year, we feel that it is almost sure to be due to some other condition than essential epilepsy. Naturally, a history of syphilis or physical findings indicative of it, call for a lumbar puncture and spinal fluid examination. In my consultation work for the Veterans' Bureau, I invariably advise spinal fluid examination if there is a history of promiscuous sexual indulgence even without a venereal history; and in many instances we have found positive spinal fluids in apparently innocent individuals.

If the patient is a drinker, in all probability he has alcoholic epilepsy. In any event you may be sure that the alcohol is not of any benefit to him.

Whenever we find organic brain disease or a toxemia or a constitutional disease, the epileptiform spells become merely a symptom and the treatment is to remove the cause by treating the primary disease.

When it comes to differentiating true epilepsy from hysteria, it is comparatively easy if the patient can be observed in a spell by one familiar with both diseases. The hysterical person never falls so as to hurt himself, does not bite his tongue, does not have involuntaries, and his convulsive seizures are not like a true epileptic's. Also his period of unconsciousness is usually longer; he lacks the psychic confusion and dazed feeling afterwards and his spells almost invariably occur when he is not alone.

So keen is the Government in recognizing the danger of a mistaken diagnosis, that they will not permit a diagnosis of epilepsy to be made from the history alone. If a man applies to the Veterans' Bureau for compensation based on a claim of epilepsy, he is sent to the hospital for observation and must be seen in a spell by a medical man before the diagnosis will stand. There are a number of men under observation on my service at the

U. S. P. H. S. Hospital No. 65 all the time; and we find a few instances of hysteria and a few of malingering. They are held ninety days and if no spell occurs during that time they are discharged with no diagnosis.

An amusing incident is related about a case of a young man, on a farm a few miles from the city, who had a fainting spell at the same time every day. It always occurred at 9 o'clock sharp every morning. The family doctor had long suspected hysteria. In order to prove his case, he had the boy's father turn the clock back two hours early one morning, unknown to the patient. Sure enough when the hands of the clock reached nine, even though they were two hours late, the patient had his spell.

The question naturally arises "What is the fate of the epileptic?" If untreated, he grows progressively worse; there is mental deterioration and he ultimately lands in the State Hospital. Many epileptics, especially children, are also feeble-minded and are cared for in State Institutions known as epileptic colonies. Very few recover spontaneously. Some remain about the same, having occasional spells and no apparent mental change. A good many are killed, accidentally, while in an attack, and that brings home one of our strongest duties toward the epileptic, namely, to advise against any employment or association which will take him into dangerous places. The Veterans' Bureau asks every day for advice as to the fitness of certain epileptic claimants to receive vocational training. In every case it is recommended that no training be given if it takes the patient into a place where he might fall, as from a roof or scaffold, or around machinery. We owe it to the patient and to his family to advise them of the danger due to an attack coming on where there is a chance to fall from a height or into a machine. As a striking instance of this I wish to cite one of my cases.

A young man of 31 years developed essential epilepsy in the army, suffering from both grand mal and petit mal attacks. On his return home he was sawing wood one day with an ordinary gasoline circular saw. A spell of grand mal type came on, he fell into the saw and his skull was ripped open slightly to the right of the median line from a point about the middle of the forehead to a point about the level of the occipital protuberance. By some miracle he lived and recovered. He now has alter-

nately four types of attacks namely, attacks of grand mal; attacks of petit mal; Jacksonian seizures with convulsions involving the left arm and leg; Jacksonian seizures involving the left face. These attacks occur in rotation. He was operated on in the hope of relieving the Jacksonian attacks with but temporary success. But his case illustrates what can happen to an epileptic if he is allowed to be around machinery. Incidentally, I might mention that this man, when I last saw him, was perfectly normal mentally, though he has one or two spells of some kind each week.

And now we have arrived at the point where we must discuss the treatment. To begin with, let me say that the treatment is divided into three parts:

1. Prophylaxis or prevention.
2. Dietetic.
3. Medicinal.

1. The prophylaxis includes the general care of the patient with respect to environment, habits, hygiene, etc. An epileptic should not be in an irritating environment. He should not be obliged to work too hard, mentally or physically. He should be kept free as far as possible from all worry and mental anxiety. He should not be compelled to carry responsibility. Petty annoyances and personal grievances should be eliminated as far as possible. His personal habits should be of the best. The most common factor in keeping up epileptic attacks is alcohol. Persistent use of liquor is fatal to the epileptic and makes successful treatment impossible. Constipation is another evil which must be corrected. Intestinal stasis and autointoxication always predispose to attacks. Regular hours and frequent bathing are useful adjuncts, with proper ventilation of living and sleeping rooms. In children, especially, attention should be given to the constitutional condition. The general health of the individual must not be overlooked and must always be given due consideration. In our private work (Riggs, Hammes & Hengstler), and as far as possible in my dispensary work, City Hospital work and Veterans' Bureau and Public Health work, careful examinations are made of teeth, nose, throat and sinuses for focal infection; and these are removed if found.

The dietetic treatment is essentially that of a low protein diet. We do this to keep the work of the gastro-intestinal tract and the danger of intestinal stasis at a minimum. We have our printed

diet slips which are given to the patient and to which he is directed to adhere absolutely. All indigestible foods and foods hard to digest are cut out, as are excesses of carbohydrates, such as candy and pastry, cake, etc. Red meats, tea and coffee are also eliminated.

In considering the medicinal treatment of epilepsy, we have become, during the past few years, dependent on one drug, luminal. Volumes have been written about luminal in the treatment of epilepsy. Arguments pro and con have been presented. There is no need of giving a technical discussion of it here. Suffice to say that luminal today is the single most efficient drug. It can be given in any rational dose and can be given indefinitely with absolutely no harm to the patient. I have patients under my care who have taken it steadily for nearly four years and who show no signs of any bad effects. Dr. Riggs has under his care a young man who for several months has taken eight grains a day with only beneficial action.

The dosage and time of administration are a matter of personal choice. Some give it twice a day, some once. Personally, I prefer a small dose given three or four times a day. Two-thirds of a grain given after meals and at bed time is an average dose. It may be necessary to give a little more or the patient may get along on a little less. The best way is to grade the dose to a point where the spells are controlled and the patient is not made drowsy. Too much luminal gives a drowsy, drunk feeling, with a staggering gait and often diplopia and the patient will complain of feeling "queer." Luminal given in capsule form is more efficacious than that in tablet form. Often, after starting a patient on luminal three times a day, when the spells are under control, it will be possible to drop one or even two of the daily doses and still have the spells remain in abeyance. As before stated, this may be kept up indefinitely if deemed necessary. We have never seen any of the adverse kidney disturbances which some recent writers are claiming for luminal extended over a long time. Some patients have an idiosyncrasy for luminal. This will show itself with the first few doses as a brilliant red flushing of the skin on the trunk or extremities similar to the flushing in scarlet fever. If this appears, the luminal must be withdrawn, when the rash promptly disappears.

Some cases of epilepsy of all types do not respond to luminal, others seem to get worse on it.

These are, however, a very small per cent of the whole. If we find that luminal is not effective, we fall back on the old bromide mixture of 15 to 30 grains three times a day; or a mixture of chloral hydrate 5 grains and sodium bromide 10 grains three times a day. We are loath to give chloral over an extended period and bromide gives the troublesome pimples which are very distasteful to the patient. So that, unless we are forced to by the ineffectiveness of luminal, we do not use them.

In my opinion, luminal, properly administered, will be of benefit in at least 90 per cent of cases of essential epilepsy. It will, in this 90 per cent, either stop the spells altogether or make them less frequent and less severe.

McCartney, in a recent issue of the British Medical Journal, reports the successful treatment of 18 cases with potassium bromide and borax. He obtained his best results with a dose of 15 grains of potassium bromide, $7\frac{1}{2}$ grains of borax purificatus and 2 minims of Fowler's solution three times a day. He noticed in all the patients a marked mental improvement, freedom from stupor after attacks, less irritability and complete change of habits for the better. Personally, I have had no experience with this treatment.

As to the treatment of a patient in the epileptic grand mal attack, there is not much to be said except to protect him from injury as far as possible. The clothing should be loosened at the throat and something gently forced between the upper and lower jaws to keep the teeth from biting the tongue and cheeks. In "status epilepticus" it is often necessary to give morphine by hypodermic or even to administer ether or chloroform to control the recurring convulsions.

Briefly, and in conclusion, I wish to say that epilepsy, from a standpoint of mental hygiene, is most important. Though there is no proof that epilepsy itself is transmitted, yet its degenerative tendency, its association with mental deficiency and with true psychoses and its progressively deteriorative course, make it a potent factor in lowering the mental standard of the human race. Many states, recognizing this, have passed laws forbidding the issuing of a marriage license to a couple if either is an epileptic. These laws, unfortunately, do not meet the situation and are not enforced. The marriage of epileptics, with their subsequent offspring, is a menace to society and should be positively curbed.

In summarizing, then, the following facts stand out clearly:

I. Essential or idiopathic epilepsy does exist and manifests itself in certain definite ways. But, before a diagnosis can be made, certain other organic diseases and functional disorders must be excluded.

II. A small percentage of epileptics can be cured. The greater portion of the others can be materially helped by treatment.

III. The treatment is prophylactic, dietetic and medicinal.

IV. Luminal is the single drug which is most efficient in epilepsy. It may be given in rational doses, over an indefinitely extended period with no detriment to the patient and will prove a benefit in 90 per cent of cases.

V. Epileptics must be guarded against dangerous environment, due to the danger of death from injury during an attack.

VI. Epilepsy constitutes a hereditary menace and should be regarded as such. It is indicative of

an unstable nervous and mental mechanism and is often associated with mental deficiency or actual insanity. Propagation of the race by epileptics should be suppressed.

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HISTORICAL DATA IN THE LIFE OF DR. RICHARD J. HILL*

Dr. Richard J. Hill was born in Guilford County, North Carolina, on February 11, 1853, and died on February 2, 1923, just a few days under 70 years of age.

His father, Dr. Nathan B. Hill, also born in North Carolina, was forced to leave his native state in 1861 because of his strong anti-slavery sympathies, and located in Minneapolis, becoming one of the most prominent among the pioneer physicians of the State of Minnesota. He was one of the organizers of the Hennepin County Medical Society, a councilman of the city of Minneapolis, a member of the State Board of Health, and, at the time of his death, president of the Minnesota State Medical Society. The family home was a farm at what is now Lake Street and Sixth Avenue South, but was then well out in the country.

Here Richard J. Hill spent his youth, and in later years he was fond of telling many stories of his hunting and fishing in the woods and on the lakes

in the neighborhood. He was educated in the public schools of Minneapolis and attended the University of Minnesota in the years 1872 and 1873. He received his M.D. degree from Jefferson College in 1875, but continued in Philadelphia for several years longer in post-graduate work. During 1879, 1880 and 1881, he was a surgeon in the regular army and was located in the western Dakota territory. After leaving the army he returned to Minneapolis and entered general practice, in which he continued active service until stricken by his last illness in the spring of 1922. The evening before he was suddenly taken ill, I had the pleasure of riding with him to St. Mary's Hospital to attend a staff meeting, and he remarked during the ride that he hadn't been in such good health nor felt so well for a long time.

In 1887 he spent six months in Europe in post-graduate work.

During his long years of service he held many positions of honor and trust. In 1884-1885 he was president of the Hennepin County Medical Society. For many years he was chairman of the Board of Censors of that Society, and, although he presided at a number of noted and notorious trials, his

*Read before the Minnesota Academy of Medicine at the meeting of March 14, 1923.

fairness and sense of justice were so well recognized that he never engendered bitterness nor made enemies. So much were his services toward peace and amity appreciated by the society, that, when he resigned from the Censors' board, he was chosen as advisor to it and continued in that capacity to his death.

In 1894 he became a member of the staff of St. Mary's Hospital, and in 1904, on the death of Dr. J. H. Dunn, succeeded him as Chief of Staff. When the hospital was standardized in 1918, he was appointed on the medical advisory board and was elected and re-elected vice-president of the staff.

Since 1912 he had been a member of the staff of the Abbott Hospital. For 35 years he served as the Chief Surgeon for Minneapolis of the Great Northern Railroad. Here his gentleness and constant care endeared him to the employees, and his fairness and rigid honesty gained for him the most complete confidence of the administration.

For 30 years he acted as examiner for the Northwestern Mutual Life Insurance Company of Milwaukee.

For many years he was a member of the Minnesota Academy of Medicine, and its president in 1900.

He was active in the affairs of the Minnesota State Medical Society. He was its president in 1912-13; its treasurer for 30 years; and a councilor from its reorganization, when it became a subsidiary to the American Medical Association.

He was married in 1881 to Miss Louise Johnson and leaves two children, a son and a daughter.

AN APPRECIATION

It has been said that "modesty is the nurse of greatness." Dr. R. J. Hill's modesty was perhaps the most quickly noticed of his many good qualities; his greatness is proved by the feeling we all have that his influence made us better men.

While frank in the expression of his well-considered convictions, no malice ever soured disagreement or reproof.

A brother to all, his hand reached out to the real man whether in rags or richly clad.

His ability to look on all sides made his judgment so just that one soon learned to depend upon it.

Despising the smooth path of policy, he walked the harder truth-blazed trail. His honesty had no exceptions and his loyalty to his professional brothers was never in question.

His skill, his good common sense and his personal helpfulness made his large following grateful and loyal.

In this fraternity a true brother's seat is vacant. His influence is to us a rich legacy.

(Signed)

L. A. NIPPERT, M.D.,

H. B. SWEETSER, M.D.,

A. W. ABBOTT, M.D.,

Committee.

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EDITORIAL

Northern and Southern Minnesota Medical Associations

A very noteworthy meeting of the Northern Minnesota Medical Association was held at Alexandria, Minn., June 4, 5 and 6, 1923.

This association has always featured a strong scientific program, combined with liberal opportunities for golf and social relaxation. The meetings have all been held within the limits of the many beautiful lakes of northwestern Minnesota.

This meeting had been especially planned with great care, and the local committee of physicians in Alexandria deserves the very greatest credit for the delightful entertainment provided. Few places have as attractive surroundings as these beautifully situated cities of Minnesota, approached by unsurpassed roads, and blessed with an air and sunshine that defy description.

A complimentary "fish fry," given on Wednesday by the citizens of Alexandria, and served by

the members of the Kinawis Club, was an evidence of ingenuity in entertainment—not only unique, but extremely satisfying.

The method was followed of providing local clinics by some of the men appearing on the program, and the local cases provided were instructive and entirely satisfactory. A special part of the program was set aside for the nurses, and this departure deserves repetition.

The Association elected its very efficient secretary, Dr. W. L. Burnap, of Fergus Falls, its president for the coming year, and named Dr. Will, of Bertha, Minn., as secretary.

It also voted to expand and include the whole of northern Minnesota, and named Duluth as its next meeting place.

The meeting of the Southern Minnesota Medical Association at Faribault on June 11th was a marked success. Almost the entire program was made up of clinical demonstrations, which method is now quite in vogue. At this meeting it was decided to hold but one meeting each year and that in either May or June. The address following the banquet by Dr. C. H. Mayo on his recent observations of European clinics was most interesting and instructive and the entertainment provided the visitors by the local profession and the citizens of Faribault most delightful.

Holding one meeting a year, as at present obtains both for the Northern and Southern Minnesota Medical Associations, thus provides two very active associations in the northern and the southern half of our state that furnish a means of providing instructive, entertaining and lively meetings in the interim between the meetings of the State Association. It is to be hoped that the times of meeting can be arranged so that they will not be so near together that those in attendance will feel unable to attend both.

Minnesota is to be congratulated upon having these two very lively organizations.

E. L. T.

The University Cancer Institute

A cancer institute to be built as a part of the University Hospital group and to be physically attached to the present hospital has been made possible by a bequest of two hundred and fifty

thousand dollars from the Citizens' Aid Fund of Minneapolis. The contribution by Mrs. George Chase Christian in memory of her husband who died a cancer death was largely responsible for the gift.

The institute will consist of fifty beds for cancer cases. Equipment for administering the newer treatment of cancer in the form of radium and deep penetrating roentgenotherapy costing fifty thousand dollars will be installed.

While radium and roentgentherapy are now being extensively used throughout the world the results are not startling. It is only through concentration on the care and study of cancer patients that the much to be desired progress in combating this disease will be made.

The cancer institute will be only one of several much needed units of the University Hospital system. Pediatric, orthopedic and obstetric units should be added and perhaps the most pressing need is that of a nurses' home.

While the state legislature has been generous to the university in the past, certain apparent needs have of late been denied. Efforts to obtain the psychopathic hospital have been unsuccessful during the last two legislative sessions.

A medical school requires sufficient hospital facilities. Attention was called to the close relationship of hospital and medical school in the larger medical centers throughout Europe by Dr. C. H. Mayo, in his address before the Southern Minnesota Medical Association, at the Fairbault meeting last month.

The gift of the Elliott Memorial hospital and the recent one of the cancer institute paves the way for future bequests of a similar nature. Large gifts for medical education are common in the east, for example in the case of the new Rehabilitation Hospital in New York City. In this newer western country we are wont to expect the state to supply such funds. It is to be hoped that further bequests to medical education in Minnesota will follow in the near future.

Professor Clemens Pirquet

Undoubtedly the European pediatricians best known in this country are Dr. Schick and Dr.

Pirquet. Many Minnesota physicians know Dr. Pirquet or at least have attended his clinic in Vienna so that when he takes the chair of pediatrics at the university he will not be wholly among strangers.

We have been furnished the following sketch of his life.

"Professor Pirquet is forty-nine years old and is at present Professor of Pediatrics at the University of Vienna and Director of the University Children's Hospital. Prior to this appointment he was Professor of Pediatrics at Breslau University, and for two years, 1909-1911, Professor and Chief of Pediatrics at Johns Hopkins Medical School and Physician-in-Chief to the Harriet Lane Johnson Children's Hospital, in Baltimore. He returned to America in 1921, when he delivered a series of lectures in the East on the growth and nutrition of children. These lectures have since appeared in book form. Professor Pirquet's residence in the United States has made him familiar with American conditions, and he speaks English excellently.

"Pirquet first came into prominence as an investigator in 1905, when he published a monograph with Dr. Schick on the nature of serum sickness. Two years later, 1907, he developed the Von Pirquet test which is so extensively used in the diagnosis of tuberculosis in children. Pirquet's earlier interest in medicine was in the infectious diseases of children, he having published numerous articles dealing with various phases of the acute infectious diseases. From 1914 to the present time his work has been chiefly with the problem of nutrition and nutritive disorders. In this connection he has carried on extensive studies on growth and physical constitution of children and in the development of a precise system of nutrition known as the Nem system. These studies have included a complete review of various indices of nutrition and of growth with the use of newer statistical and graphic methods. Since the war, conditions have led him into the care and treatment of tuberculosis in children. He has at the present time a large service in Vienna devoted to the treatment of tuberculous children."

The University is fortunate in obtaining the services of such an eminent physician as Professor Pirquet and it is to be hoped that his genius will further development in its new soil.

Woman's Foundation for Health

Much attention has been paid to the curing of disease and in recent years to its prevention. The conception of health as something to be achieved and attainable by the average individual is the theme of the Woman's Foundation for Health.

In brief, the Woman's Foundation for Health is an organization correlating the health activities of numerous national woman's organizations. It was organized in the fall of 1919 and representatives of its component organizations make up its House of Delegates which meets each November to discuss policies and elect officers.

The purpose of the Foundation is largely educational. It desires "to establish the conviction that health is generally attainable through individual effort and responsibility" and "that mental health is as procurable as physical health."

A reading of "A Handbook on Positive Health" published by the foundation in co-operation with the Council on Health and Public Instruction of the American Medical Association, gives a more concrete idea of what the purpose of the Foundation is. In this book are handled such subjects as health examinations; individual exercises; feet, posture, shoes and walking; nutrition; mental health in children and adults; the process of reproduction; recreation. The subjects are handled by well known sociologists and medical men in a most masterly and practical manner.

Here is another organization advocating health examinations. In its handbook is an elaborate chart for tabulating findings—too elaborate for the average physician. The kind of health examination described would be better carried out in part at least by a physical director of a gymnasium or perhaps even better by a specialist in health examinations. It is questionable whether the average physician will ever be "educated" to the point where he will concern himself in taking periodic strength tests, for instance. The value of periodic examinations, however, has been firmly established and physicians are beginning to become interested.

It is perfectly true that too many individuals, and particularly women, are content to enjoy only half health, either through ignorance or the existence of bad habits. Education will do a lot, but emphasis must be laid on individual initiative and will power to carry out known health procedures. The Women's Foundation for Health has this double function and has our hearty approval.

MISCELLANEOUS

MEDICAL AID FOR RUSSIA

In a recent mail an appeal was received from Geneva for aid for the doctors and medical institutions of Russia. There is a deplorable lack of things medical throughout Russia so that hospitals are forced to close and epidemic disease runs riot. This appeal is made to the scientific and medical bodies of Europe and America and is signed by numerous medical notables in the various European countries. Contributions may be sent to the secretary, Dr. Fridtsof Nausen, 54, rue du Rhone, Geneva, Suisse.

In this country the American Medical Aid for Russia is now the medical section of the American Friends Service Committee, an organization of Quakers. The Minnesota Russian Relief Committee with headquarters in Minneapolis represents this organization in this northwestern territory and desires to effect some organization of physicians, nurses and drug dealers to alleviate the appalling need in Russia.

The following letter from Dr. Eversol, a member of the Commission on Russian Relief, to Dr. Emerson, of the American Medical Aid for Russia, was submitted by Dr. Frank Smithies, general secretary of the American College of Physicians, at its meeting in Philadelphia in April, and the appeal was endorsed by the college. The letter is published here for the information of the profession.

Dr. Eversol's letter reads as follows:

"Dr. Haven Emerson,
American Medical Aid for Russia,
103 Park Avenue,
New York City.

"My Dear Mr. Emerson:

"As public health adviser to the Russian Commission of the National Information Bureau, I had the opportunity of making a survey of health conditions in the larger cities, in normal country districts, and in the famine districts of Russia. You are conversant with the fact that Miss Bond and Miss Davis assisted me in this work, but I desire to emphasize the importance of their co-operation.

"Our observations agree with the reports of the League of Nations Health Section as to typhus, recurrent fever, cholera, dysentery and smallpox. Great effort is being made to control epidemic diseases, but they are still to be found in all parts of the country to an extent that would tax the health resources of any country. Accurate medical statistics are not available, but the fact that in the past five years according to the most moderate estimates of epidemiologists, there have been 25,000,000 cases of typhus alone, gives some idea of the extent of the problem. Malaria is widespread, especially among the peasant population, and is still on the increase. In December the Commissariat of Health reports 8,000,000 cases registered. No statistician dares even estimate the inroads of tuberculosis upon an exhausted population in a chronic state of undernutrition.

"One of the most serious problems which confronts the medical profession is the care of millions of children whose

health has been damaged by adverse social and economic conditions. Studies made among 25,000 school children in Kiev and 22,000 in Kharkov, both in the famine region, show 75 per cent and 82 per cent classified as tubercular on the basis of von Pirquet tests plus positive clinical findings in each case. A school dispensary in Petrograd reports that if marked anemia and malnutrition are included 100 per cent of the 27,000 children examined in 1922 presented symptoms requiring treatment.

"Hospitals, which have been taxed to the utmost to meet the epidemic situation, are now running with greatly reduced efficiency owing to lack of necessary equipment and supplies. Surgical instruments are worn beyond the possibility of repair. The American Relief Administration and other foreign relief organizations have sent great quantities of medical supplies, but Russia is so large and so impoverished after the many years of isolation and disease that we found medicines only in small quantities or entirely lacking in all the districts we visited in Russia. In many of the so-called normal areas, which have never been touched by foreign relief, the lack of essential supplies is even more acute than in the famine area. Dispensaries, while still running, are hampered by the lack of even the simplest drugs. For example, one district in the Samara Government, reporting 4,500 cases of malaria, had not one grain of quinine.

"In spite of these material handicaps, medical work in Russia is not an incoherent effort of individual physicians. The central Commissariat of Health in Moscow is a real organization, with local departments in every government functioning on parallel lines. It has a carefully thought out program covering every phase of preventive and curative work formulated and directed by a scientific council, including physicians of international reputation. Constructive work has been hampered by the emergencies of famine and epidemic, but there is no reason to believe that it will not be further developed as soon as economic conditions permit.

"Russian doctors and nurses as a result of their self-sacrificing efforts to maintain a high standard of medical work, have reached the point of exhaustion. It is certain that at least 75 per cent of these men and women are existing on incomes inadequate for even the bare necessities of food and clothing. Great numbers of doctors and nurses have died in fighting epidemics, others have contracted tuberculosis, and those who remain are so weakened by years of privation and overwork that they have slight resistance to disease. All achievement is being paid for in terms of undermined health and death among the medical personnel, but Russian doctors everywhere, while admitting their desperate economic condition, made only one appeal for themselves—medical literature from the outside world.

"In my opinion the point of attack in the present health situation of Russia is to preserve the medical personnel and to supply their essential professional needs. There is great need for food and for instruments, drugs, medical supplies and literature to make their work effective. I trust that the National Campaign of Physicians and Surgeons in behalf of medical aid for Russia will bring this

situation so forcibly to the attention of the American public that immediate and generous aid will be given.

"Yours sincerely,

"H. O. EVERSOLE."

Contributions may be sent to the Minnesota Russian Relief Committee, 307 Lincoln Bank Building, Hennepin and Eighth, Minneapolis.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

TRI-STATE DISTRICT MEDICAL ASSOCIATION

The annual assembly of the Tri-State District Medical Association of Iowa, Illinois, Wisconsin and Minnesota and districts of surrounding states will be held at Des Moines, Iowa, on October 29, 30, 31 and November 1, 1923.

MINNEAPOLIS SURGICAL SOCIETY

Beginning Thursday, October 4, 1923, the Minneapolis Surgical Society will give a Clinic Day the first Thursday of each month. The Clinic Day program will consist of Operative Clinics at the hospitals in the forenoon. Dry Clinics in the afternoon and a literary program in the evening. All physicians and surgeons are cordially invited to visit these clinics. Announcement of the program will appear in advance in this journal.

ST. LOUIS COUNTY MEDICAL SOCIETY

The St. Louis County Medical Society will hold its summer meeting on the Iron Range at the Esquagama Club. Tentative plans are for a scientific and business meeting at 4 P. M. to be followed by a dinner and a dance in the evening. The date has been set for August 4.

OF GENERAL INTEREST

Dr. G. G. St. Clair of Duluth has moved his office to the Lyceum Building.

Work on the addition to St. Luke's Hospital, Duluth, is now well under way.

Dr. Frank Knapp, formerly with the Nicollet Clinic of Minneapolis, is now located at Duluth.

Dr. A. M. Hanson, who spent two months in Europe, has returned to Faribault to resume practice.

Dr. Robert S. Gutsell, formerly of Maiden Rock, Wisconsin, has located at Zumbro Falls, Minn.

Dr. W. S. Lemon of Rochester left for Muncie, Indiana, where he will read a paper before a medical society.

Dr. Oliver S. Olson was elected city commissioner of Duluth and assigned the department of public safety.

Dr. C. H. Sherman, formerly of Marine-on-St. Croix, has

opened up an office in the Andersen Block, Becker, Minnesota.

Dr. A. M. Hanson of Faribault, who has been in Europe the past two years, returned to his practice in Faribault in June.

Dr. F. P. Strathern of St. Peter will erect an office on his business property on West Nassau street during the summer months.

Dr. A. F. Hunte of Truman was elected president of the Blue Earth Valley Medical Association at the annual meeting, June 11.

Dr. P. C. Gibson of Onamia, believed to be the oldest Legionaire, is ill. Dr. Gibson entered the service in the medical corps.

Doctors W. A. Coventry, C. L. Haney and E. L. Armstrong of Duluth attended the Shriners' convention at Washington, D. C.

Dr. L. A. Sukeforth has been appointed health officer of Duluth to succeed Dr. E. W. Fahey. Dr. Clarence Taylor will continue as assistant.

Dr. F. A. Willis of Rochester gave a lecture on "The Prevention of Heart Disease" Thursday evening, May 24, in the lobby of the clinic.

Dr. C. A. Hedblom of Rochester was elected president of the American Association for Thoracic Surgery, at the meeting of that body held May 29 and 30 in Chicago.

Dr. and Mrs. A. G. Beyer, of Red Wing, sailed from New York, June 16, for Vienna, where Dr. Beyer will take up studies in eye, ear, nose and throat for an indefinite period.

Dr. O. F. Melby, Thief River Falls, was appointed a member of the State Board of Health by Governor Preus. His commission is for an unexpired term running until January 1, 1925.

Dr. F. M. Turnbull and Mrs. Turnbull, Duluth, with their son, Frederick, are attending the national convention of the American Medical Association, which is being held at San Francisco, California.

Dr. John C. Staley, St. Paul, was appointed June 25, 1923, superintendent of the City and County Hospital, now known as the Ancker Hospital, St. Paul. Dr. Staley was unanimously recommended for the position at a special meeting of the Ramsey County Medical Society.

At a recent meeting of the Minneapolis Surgical Society the following officers were elected: Dr. James M. Hayes, president; Dr. James A. Johnson, vice president; and Dr. A. A. Zierold, secretary.

Dr. E. G. Senty, who received a graduate degree from the University of Minnesota in January, left the Mayo Foundation, Rochester, June 1, to become associated with Dr. Paul A. White in Davenport, Iowa.

Dr. Gilbert J. Thomas, Minneapolis, was recently elected to membership in the American Association of Genito-

Urinary Surgeons, which association numbers fifty of these specialists throughout the United States.

Dr. D. E. Seashore of Duluth was elected chief of the staff of St. Luke's Hospital at the annual election of officers, held recently. Dr. Seashore succeeded Dr. Robert Graham. Dr. H. M. Tibbitts was re-elected secretary.

Eighty members of the American Surgical Association, which had been in session at Rochester, were entertained at the University Club, St. Paul, on June 3 by Dr. Arthur Law of Minneapolis and Dr. A. McLaren of St. Paul.

Dr. K. E. Kretschmar, recently from Munich, Germany, has been licensed to practice in Minnesota and has opened offices in Minneapolis at 2730 Hennepin Avenue S. His practice is limited to the treatment of varicose veins and varicose ulcers.

Professor K. F. Wenckebach, of the University of Vienna, gave Mayo Foundation lectures before the staff and fellows of the Mayo Clinic and Foundation, June 7 and 8, on "Arrhythmias of the Heart and Their Therapeutic Control." and "Angina Pectoris and Its Surgical Treatment."

Dr. Francis Carter Wood, of the Institute for Cancer Research of the Columbia University, New York City, and Dr. James B. Murphy, of the Rockefeller Institute, gave Mayo Foundation lectures at the Mayo Clinic, June 11 and 12, on "Radiotherapy in the Treatment of Cancer."

Drs. H. M. Henderson, Gordon B. New, and H. F. Helmholtz of Rochester, attended the meeting of the Pacific Northwest Medical Association held in Seattle, June 19, 20 and 21, where they presented papers. They also attended the annual meeting of the American Medical Association at San Francisco.

The Cloquet Hospital, formerly owned by Dr. James Fleming, has been purchased by Dr. Franklin W. S. Raiter and will be operated as a general hospital, open to all physicians in Cloquet and vicinity. Dr. Roy F. Raiter, now located at the Cincinnati General Hospital, will be associated with his brother in the management of the Raiter Hospital.

The meeting of the association of resident and ex-resident physicians of the Mayo Clinic was held in Rochester, June 4, 5 and 6. The officers elected for the coming year follow:

President—Dr. T. M. Joyce, Portland, Oregon.

Vice President—Dr. R. P. Sullivan, New York City.

General Secretary—Dr. Harold L. Foss, Danville, Pennsylvania.

Program Committee—Dr. Clyde Roeder, Omaha, Nebraska, chairman; Dr. G. J. Thomas, Minneapolis, Minnesota; Dr. A. J. Scholl, Rochester, Minnesota.

Local Arrangements Committee—Dr. Lee Pollock, Rochester, Minnesota, chairman; Dr. P. A. O'Leary, Rochester, Minnesota; Dr. B. E. Hempstead, Rochester, Minnesota.

Secretary and Treasurer—Dr. R. D. Mussey, Rochester, Minnesota.

NEW AND NON-OFFICIAL REMEDIES

During May, the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

CONNAUGHT ANTITOXIN LABORATORIES:

Insulin-Toronto.

Insulin-Toronto—5 c.c. vials, 5 units in each cubic centimeter.

Insulin-Toronto—5 c.c. vials, 10 units in each cubic centimeter.

MALLINCKRODT CHEMICAL WORKS:

Arsphenamine-Mallinckrodt.

Arsphenamine-Mallinckrodt Ampules, 0.1 Gm.

Arsphenamine-Mallinckrodt Ampules, 0.2 Gm.

Arsphenamine-Mallinckrodt Ampules, 0.3 Gm.

Arsphenamine-Mallinckrodt Ampules, 0.4 Gm.

Arsphenamine-Mallinckrodt Ampules, 0.5 Gm.

Arsphenamine-Mallinckrodt Ampules, 0.6 Gm.

Arsphenamine-Mallinckrodt Ampules, 1.0 Gm.

Barbital-M.C.W.

Cincophen-M.C.W.

Mercuric Cyanide-M.C.W.

Quinine Ethylcarbonate-M.C.W.

PARKE, DAVIS & Co.:

Pollen Extract Ragweed-P. D. & Co.

Pollen Extract Timothy-P. D. & Co.

NON-PROPRIETARY ARTICLE:

Insulin.

NEW AND NON-OFFICIAL REMEDIES

Skiabaryt for Oral Administration.—A mixture of Barium Sulphate-Merck for X-Ray Diagnosis, 75 to 85 per cent, admixed with sugar, tragacanth, vanillin, cinnamon and cacao. A smooth mixture is made with water and this is then ready for drinking. Merck & Co., New York City. (Jour. A. M. A., May 12, 1923, p. 1381.)

Skiabaryt for Rectal Administration.—A mixture of Barium Sulphate-Merck for X-Ray Diagnosis, 75 to 85 per cent, admixed with sugar, tragacanth, vanillin and cinnamon. A smooth paste is formed by addition of water and it is then ready for administration through the irrigator. Merck & Co., New York City. (Jour. A. M. A., May 12, 1923, p. 1381.)

Neutral Acriflavine.—It has the actions and uses of acriflavine (see New and Non-official Remedies, 1923). Being neutral in reaction, it is claimed not to have the smarting and irritating effects of acriflavine solutions. Neutral acriflavine is a brownish-red, odorless, granular powder. It is soluble in less than 2 parts of water, forming a brownish-red solution which fluoresces on dilution and which has a bitter taste. The Abbott Laboratories, Chicago, Ill. (Jour. A. M. A., May 19, 1923, p. 1455.)

Neutral Acriflavine-Abbott.—A brand of neutral acriflavine-N. N. R.—It is sold in substance and also in the form of Tablets Neutral Acriflavine-Abbott, 0.03 gm., and Enteric Coated Tablets Neutral Acriflavine-Abbott, 0.03 gm. The Abbott Laboratories, Chicago, Ill. (Jour. A. M. A., May 19, 1923, p. 1455.)

PROPAGANDA FOR REFORM

The Intracardiac Injection of Epinephrin.—Recently much publicity has been given to the power of epinephrin, when injected into the heart, to produce a response resulting in revivification when the heart has apparently ceased its action from certain causes. Of the many cases which have been reported, a remarkable one is that in which collapse occurred during an examination for extra-uterine pregnancy. After other methods had been tried without avail, an intracardiac injection of epinephrin was given. In ten seconds the heart sounds became perceptible. Four weeks later the patient was discharged as well. It must be borne in mind that the instances in which such restoration can be utilized are rare. When death comes as the result of the wearing away of tissues, as the result of toxic action of either bacterial or metallic poisons, or as the result of destruction of vital organs, it would be cruel and futile to arouse false hopes by what could only be a sensational experiment. (Jour. A. M. A., May 5, 1923, p. 1314.)

Intravenous Therapy.—For some years the Council on Pharmacy and Chemistry has urged conservatism in the adoption of the intravenous method of administering drugs. It has been necessary to do this to offset the propaganda of proprietary firms that, for commercial purposes, feature the indiscriminate use of intravenous therapy. In order that the status of this form of drug administration might be presented to the profession, and that it might be made clear under just what conditions the intravenous administration of drugs is warranted, the Council publishes a report prepared by a committee which studied the problems involved. The report discusses the fallacy of the arguments commonly advanced by those who advocate intravenous therapy as a routine. The Council has no desire to discredit the rational use of drugs by intravenous injection, but, on the contrary, it seeks to avoid the accidents and disappointments that must follow the abuse of a method which, rightly employed, may be a life-saving measure. The Council places itself on record as opposing the reckless and indiscriminate use of drugs by intravenous injection with its attendant dangers and increased needless expense to the patient. However, the Council recognizes the legitimate, life-saving nature of the intravenous administration of drugs in extreme cases. (Jour. A. M. A., May 5, 1923, p. 1331.)

Ethylene and Acetylene.—There is a revival of interest in two gas anesthetics: ethylene and acetylene. Both gases were the subject of experiment in anesthesia many years ago. The studies of A. B. Luckhardt and J. B. Carter and of W. E. Brown with ethylene confirm the earlier experiences and hold out promise of the usefulness of the gas. In the recent experiments with acetylene, the objectionable odor of the gas has been overcome by the addition of oil of pine. A mixture of acetylene, 40 parts, and oxygen, 60 parts, flavored with oil of pine, has been used in major operations. The advantages claimed for acetylene are: rapid induction; simplicity of administration; safety; absence of struggling and excitement; and rapid recovery. Both ethylene and acetylene are asphyxiants. Their usefulness in relation to that of nitrous oxid, and also to ether, remains to be demonstrated. (Jour. A. M. A., May 12, 1923, p. 1383.)

Fleischmann's Yeast Not Admitted to N. N. R.—In March, 1921, the Council on Pharmacy and Chemistry took up the consideration of Fleischmann's Yeast on account of the extensive and extreme therapeutic claims which were made for this preparation. Since then the Council has given much attention to the subject of yeast therapy. After consulting with eminent students of nutrition and clinicians qualified to speak with authority on questions of nutrition, dietotherapy and pediatrics, the Council concluded that there was little likelihood that the administration of yeast or yeast preparations will be of therapeutic value in many cases for which they are advised. The Council finds that many advertisements for Fleischmann's Yeast are misleading in that they tend to create the belief that many diseases are prevented or cured by its use. Advertisements addressed to physicians are likely to lead to the belief that the efficacy of yeast therapy in many conditions has been established. Advertisements addressed to the public are bound to create the opinion in the mind of the lay reader that reliance may be placed on yeast in many conditions. The Council refused recognition to Fleischmann's Yeast (1) because it is advertised by means of unwarranted and misleading therapeutic claims, and (2) because it is advertised to the public with unwarranted therapeutic claims that may become a detriment to the public health. (Jour. A. M. E., May 12, 1923, p. 1398.)

The Standardization of Pituitary Extract.—Pituitary extract—a solution containing the water soluble principle or principles from the fresh posterior lobe of the pituitary body of cattle—is official in the U. S. Pharmacopeia as Solution of Hypophysis, and a method of standardization is prescribed. In practice, the pharmacopeial standard has been found unreliable and manufacturers have adopted various modifications. Further, the pharmacopeial solution has been found too weak, and stronger preparations are being marketed. Some of these have been accepted for New and Non-official Remedies. The wide variation in the strength of pituitary extracts and the unsatisfactory character of pharmacopeial assay method are shown in a study carried out by Erwin E. Nelson, and a study by Morris I. Smith and Wm. D. McKlosky. The next pharmacopeia should provide a pituitary solution of satisfactory strength and an assay method which will insure a satisfactory control of this important medicament. Until such a standardization is provided, the physician will do well to use one of the pituitary preparations accepted for New and Non-official Remedies, which he has found to be satisfactory. (Jour. A. M. A., May 19, 1923, p. 1473.)

Tryparsamide.—The Council on Pharmacy and Chemistry publishes a preliminary report on the experimental status of Tryparsamide. The drug is an arsenical developed in the Rockefeller Institute for Medical Research. Pending the outcome of clinical studies, the substance is not offered for sale. Tryparsamide is primarily a trypanocidal agent, but it possesses some spirocheticidal activity. It is said to produce "tonic" effects. It is proposed for use in the treatment of trypanosomiasis, syphilis of the central nervous system and late stages of syphilis with inactive or indolent lesions, and it is said to be specially indicated in the treatment of cachectic individuals. The Council states that the favorable reports of the effect of Tryparsamide on try-

panosomiasis and neurosyphilis appear to warrant controlled trials of the drug in these conditions, but also warns that the possibility of harm to vision must be given due consideration. The Council postponed the acceptance of Tryparsamide for New and Non-official Remedies until its therapeutic value and safety are established, and until it is on the market. (Jour. A. M. A., May 26, 1923, p. 1521.)

Fibroform and the Nolan Inhaler.—"A cure for pulmonary tuberculosis by the use of pure carbon and calcium was claimed by Dr. Wm. T. Nolan of Jeanette, Pa., in an address before the Westmoorland County Medical Society in Greensburg, Pa." This was the first paragraph of a news story sent out by the Associated Press. The treatment, it seems, consists of the inhalation of a fine powder said to be made by mixing soot with calcium carbonate, phosphate, chloride and lactate. This, Dr. Nolan calls "Fibroform." Fibroform is used by means of the Nolan Inhaler. The outfit appears to be supplied by Dr. Nolan for one hundred dollars. As no quantities are given, the composition of this latest "consumption cure" is secret. The treatment is put forward on the basis of utterly inadequate tests made only by its sponsor. (Jour. A. M. A., May 26, 1923, p. 1535.)

BOOK REVIEWS

NEW AND NON-OFFICIAL REMEDIES, 1923, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1923. Cloth. Price, postpaid, \$1.50. Pp. 415 + XXXVI. Chicago: American Medical Association, 1923.

The progressive, up-to-date physician cannot dispense with the newer remedies, proprietary and non-proprietary. Yet he can neither select them on the basis of the manufacturer's claims alone, nor devote his patients to experiments while he tries out those claims.

New and Non-official Remedies is the publication of the Council on Pharmacy and Chemistry through which this body annually presents the American medical profession with disinterested, critical information about the proprietary medicines which are offered to the profession, and which the Council deems worthy of recognition. In addition to the description of proprietary preparations, the book contains descriptions and those non-official remedies which the Council deems deserving of consideration by the profession.

A valuable feature of the book is the grouping of preparations in classes. Each of these is introduced by a general discussion of the group. Thus the silver preparations, the iodine preparations, the arsenic preparations, the animal organ preparations, the biologic products, etc., each is preceded by a general, thoroughly up-to-date discussion of the particular group. These general articles compare the value of the products included in the group with similar pharmacopeial and other established drugs which it is proposed that these proprietary preparations shall supplant.

A glance at the preface of this volume shows that the book has been extensively revised. In fact each edition of

New and Non-official Remedies is essentially a newly written book, brought up to date by those who speak with authority on the various phases of therapeutics.

Physicians who wish to know why a given proprietary is not described in New and Non-official Remedies will find the References to Proprietary and Unofficial Articles not found in N. N. R. of much value. In this chapter (in the back of the book) are given references to published articles dealing with preparations which have not been accepted.

New and Non-official Remedies should be in the hands of all physicians who prescribe drugs. The book contains information about the newer *material medica* which cannot be found in any other publication.

The book will be sent postpaid by the American Medical Association, 535 North Dearborn Street, Chicago, on receipt of one dollar and fifty cents.

THE TONSILS: Faucial, Lingual and Pharyngeal, by Harry A. Barnes, M. D., illustrated, Second Edition; Publishers C. V. Mosby Company. Price \$5.00.

A monograph of some two hundred odd pages relating to this special structure or gland.

The embryology, histology, pathology and anatomy are graphically described, the same taking up half of the book. The chapter on diseases of the tonsils discusses concisely the various pathologic and bacteriologic lesions relating to the gland; the cuts illustrating this chapter are well executed, though we believe the chapter relating to neoplasms could have been brightened by illustrations.

The indications for tonsillectomy could have been more elucidated, as we could find no reference to the importance and relation of the gland in diseases of the ear.

As local anesthesia plays such an important part in tonsillectomies nowadays it would seem that the preparation and technique could have been made more instructive had there been illustrations.

The surgery of the tonsil has been divided into the two recognized methods—dissection and snare, and the guillo-

tine or its modifications. Inasmuch as the method of choice belongs to the individual operator, we believe, as in other parts of the book, this chapter could have been improved by illustrations. Complications and sequelæ are given comprehensive consideration.

As would be expected, x-ray and radium in their relation to the treatment of tonsil abnormalities conclude the subject.

For the bookmaker's part the book has been well made up, but being a monograph on such a common subject we believe if more copiously illustrated the work would have been greatly improved.

GEORGE C. DITTMAN.

ABDOMINAL PAIN. By Prof. Dr. Norbert Ortner, chief of the second medical clinic at the University of Vienna. Authorized translation by William A. Brams, M.L., and Dr. Alfred P. Luger.

In introducing his work, the author states that, although pain is rarely considered alone in making a diagnosis, it is usually one of the early symptoms and it is therefore justifiable to consider pain as the starting point in differential diagnosis. He has accordingly compiled a book in which emphasis is placed upon pain, although the accompanying symptoms are quite fully considered.

"Abdominal Pain" is very well arranged. The first chapter is devoted to the discussion of diffuse abdominal pain, with special attention being paid to the differentiation of acute intestinal obstruction and acute perforation of a diseased organ. In the following chapters, localized abdominal pain is taken up fully, a very complete regional differential diagnosis resulting.

With the exception of repetition, to which all works of differential diagnosis are subject more or less, "Abdominal Pain" is free from further criticism and can well be recommended to all as a very valuable reference book.

V. P. HAUSER, M.D.

FOR SALE—A fine established G. U. & Skin Practice in Duluth, Minnesota. Will sell entire office equipment except instruments, and stay with buyer thirty days to introduce him to my patients. Have accepted a position in Los Angeles. Right party can buy cheap and immediately step into a splendid practice. Address B-59, care MINNESOTA MEDICINE.

WANTED—Young man capable of taking charge of Pediatric department and doing general work, to take salaried position with clinic group associated with hospital in South Dakota town. State qualifications and references in reply. Address B-57, care MINNESOTA MEDICINE.

HIGH SCHOOL GRADUATE, age 24, wishes position as assistant in either doctor's or dentist's office. Reference: Dr. Peter M. Holl. 2011 Chicago Avenue, Minneapolis. Address B-58, care MINNESOTA MEDICINE.

POSITION WANTED—By lady of 27 with six years' experience in dental and two in medical office. Proficient in x-ray and general office work. Miss M. L. King, 3444 Portland Avenue, Minneapolis. Phone Colfax 6345.

OPENING FOR A PHYSICIAN—Collections 98%, office equipment for sale. Address B-60, care of MINNESOTA MEDICINE.

MINNESOTA MEDICINE

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Northern Minnesota Medical Association and Minneapolis Surgical Society*

VOL. VI

AUGUST, 1923

No. 8

ORIGINAL ARTICLES

UNUSUAL FINDINGS IN ROENTGENOGRAPHY OF THE HEAD*

CHARLES G. SUTHERLAND, M.B. (Tor.)

Associate in Roentgenology, Mayo Clinic
Rochester, Minnesota

FOREIGN BODIES IN THE FACE AND SKULL

In 1921 I reported two cases of splinters of glass in the face and skull, and since that report we have had a third case.

REPORT OF CASES

Case 1 (A352100), a man, aged forty-five years, a vaudeville artist, came to the Clinic complaining of a chronic inflammatory condition of the right side of the face, difficulty in opening the mouth, and pain on movement of the jaw. About four weeks before, after a long period of intermittent hot applications, a discharge of bloody pus appeared at a point 2 cm. above, and just anterior to the external ear. The patient could feel a sharp point in the opening of the sinus. He had been in an automobile accident thirteen months before, and was thrown against the windshield, his head passing through the glass. Freed from his position, he was taken to an emergency hospital, where sixteen stitches were required to close a wound in the right external ear just posterior to the tragus. The wound healed by first intention, and the stitches were removed by a physician in another city, who examined the patient and made a diagnosis of fracture of the bones of the face. Five weeks later he commenced to have severe pain, some swelling of the tissues of the face, and difficulty in opening the mouth. He suffered almost continually thereafter, and consulted physicians in various cities, all of whom diagnosed fractures of the bones of the face or skull; but none had roentgen examinations made. He was forced to cancel several vaudeville engagements because of disability from pain and swelling of the face. Examination at the Clinic revealed a discharging sinus above, and just anterior to the right external ear; a sharp corner of what was taken to be glass protruded from the mouth of the sinus.

The roentgenogram revealed a triangular, opaque shadow 8 cm. along the sides and 3.5 cm. across the base, the base running from the glenoid fossa upward and backward parallel with the outline of the pinna, and the apex reaching to a point 1 cm. above, and 0.5 cm. behind the external angular

process of the eye. The patient was admitted to the hospital and the glass removed under local anesthesia. The glass was 4 mm. thick. Complete relief followed.

Case 2 (A248010), a man, aged thirty years, had been in an automobile collision one month before coming to the Clinic. A splinter of glass had been driven through the skull. The fragment entered at the inner margin of the right orbit, and apparently passed through the middle line and lodged against the occipital bone. Splinters of glass were removed from the right eye on the eleventh day after the accident, and from the right cheek on the thirteenth day. At about this time an unsuccessful attempt was made to locate and remove the fragment of glass in the brain. The patient was brought to the Clinic in a semicomatose state, with a moderate degree of paralysis of the right arm and leg, ptosis of the right eye, impairment of vision and disturbance of motion.

Roentgenograms revealed a splinter of glass in the posterior portion of the skull, which in the anteroposterior view appeared to be in the middle line. The patient's condition was such that further surgical intervention offered no prospect of improvement, and he was taken to his home. Word was received of his death within a fortnight.

Case 3 (A374381), a man, aged forty years, was in an automobile accident four months before coming to the Clinic. A splinter of glass from the windshield penetrated his face, and lodged in the right zygomatic fossa. Roentgenogram (Fig. 1) revealed the splinter in dislocation. The patient came for an operation for appendicitis. Removal of the splinter was advised at this time, but not urged; the patient decided against removal.

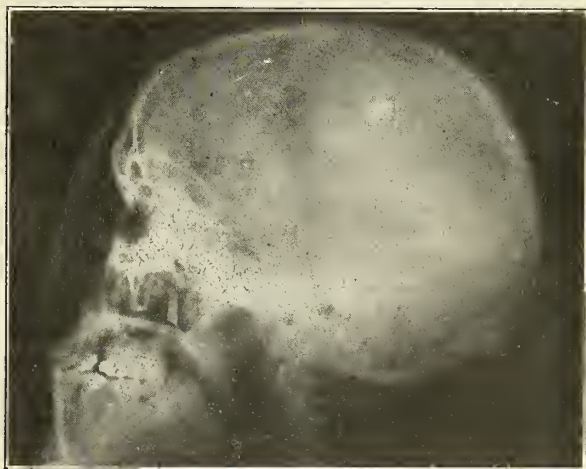


Fig. 1 (Case A374381). Lateral roentgenogram showing splinter of glass in the right zygomatic region.

*Read before the Minnesota Neurological Society, May 12, 1923.

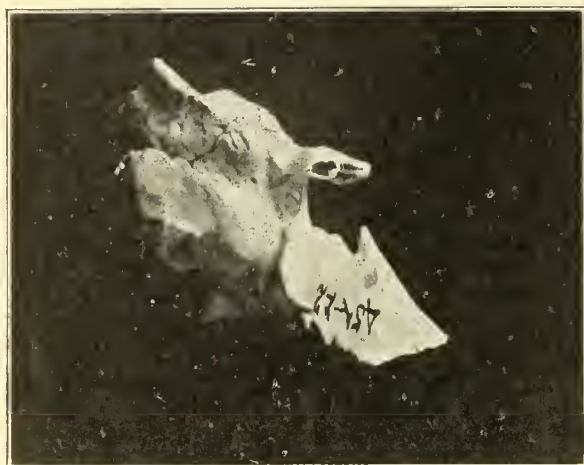


Fig. 2 (Case A404519). Sella turcica showing erosion of the floor thirty-seven days after accident and nine days after definite clinical evidence of abscess of the brain and increased intracranial pressure.

Case 4 (A404519), a boy, aged thirteen years, accidentally shot himself with a 22-caliber rifle, the bullet entering the left canine fossa. On admission to the hospital one week later, he was apathetic, and showed some rigidity of the muscles of the neck. The cerebrospinal fluid was slightly yellow in color, the pressure was +2, with a cell count of 29 lymphocytes. The leukocyte count was 8,000. The patient recovered sufficiently to be taken home one week later, but was readmitted after two weeks, because of occasional headaches, vomiting, diplopia, fever, and slight rigidity of the muscles of the neck. At this time examination revealed bilateral choked discs, positive Kernig sign, and a cerebrospinal fluid cell count of 160 small lymphocytes, 80 large lymphocytes and 340 polynuclears. The leukocyte count was 8,000. The headaches increased in intensity, the leukocyte count rose to 71,600, the tem-

perature to 103, and he died nine days after the second admission.

Necropsy showed that the bullet had entered at the left canine fossa, perforated the anterior portion of the right cribriform plate of the ethmoid, severed the right olfactory nerve, and lodged within the cerebral cortex, just beneath the dura in the coronal plane about 1 cm. to the right of the medial border of the right cerebral hemisphere. Within the right frontal lobe, and just anterior to the lateral sinus was an abscess cavity (5 cm. in diameter) containing about 50 c.c. of pus. The abscess had ruptured into the lateral ventricle, in which pus was found. There was also pus in the fourth ventricle. In the floor of the sella turcica commencing erosion was evident (Fig. 2).

Roentgenograms made immediately prior to necropsy (Figs. 3 and 4) revealed evidence of increased intracranial pressure, but none of abscess. A roentgenogram of the brain after removal showed a small circumscribed cavity at the location of the bullet, and another cavity on the lateral aspect of the frontal lobe, the latter having ruptured and emptied with the removal of the dura.

OXYCEPHALY

Oxycephaly has three cardinal features: (1) gradually progressing impairment of vision, (2) exophthalmos, and (3) characteristic cranial deformity. The cause is given as a premature synostosis, usually in the sagittal suture, sometimes in the coronary, temporosphenoidal or parietosphenoidal, and less often in the lambdoidal and parieto-occipital sutures. Many hypotheses have been advanced as to the cause of the synostosis, but time will not permit a discussion of these. Fletcher has described three distinct groups of oxycephaly: (1) congenital, with the exophthal-



Fig. 3 (Case A404519). Lateral roentgenogram, showing bullet in brain with evidence of increased intracranial pressure.



Fig. 4 (Case A404519). Roentgenogram of the brain, showing abscess at the location of the foreign body and a lateral abscess which had ruptured and emptied with the removal of the dura.

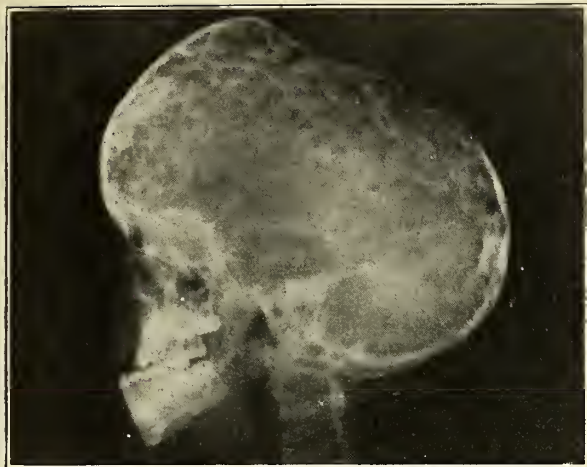


Fig. 5 (Case A380861). Lateral roentgenogram of an oxycephalic head.

mos and cranial deformity present at birth, (2) change in the shape of the head developing in the first few months of life, and (3) a condition in which the patient is normal for the first few years, and the earliest abnormal signs appear between the second and sixth years. In the collected cases in the literature, the incidence has been largely in the male; in the four cases in the Mayo Clinic series, it is divided equally. The impairment of vision is usually noted between the second and sixth years. The blindness is due to a postneuritic atrophy. Exophthalmos, owing to shortening of the orbital cavities by the pushing forward of the greater wings of the sphenoid to form their posterior in place of their lateral walls, is seen in more than 50 per cent of cases. It is often greater on one side than on the other. The lid symptoms of exophthalmic goiter are not seen. Strabismus, commonly divergent, but occasionally convergent, is present in the majority of cases. Nystagmus is frequent and the mobility of the globes is often limited.

Roentgenograms (Figs. 5 and 6) reveal a characteristic cranial deformity, the forehead and anterior portion of the skull being unusually high. The increased height is usually in the frontal region, but it may be in the parietal. A projection corresponds to the sagittal suture, and the apex is just posterior to the anterior fontanel. The parietal bones drop abruptly to the normal level, and there may be a hollow on each side of the crest. The cranium is always wide in proportion to the length; the cranial cavity may be almost spherical; the vault is pointed; the two halves of the skull are

usually symmetrical, but striking exceptions have been reported. Thickening or depressions along the line of the sutures may be seen, and obliteration of the superciliary ridges and prognathism are often noted. Flattening of the malars, often unilateral, is common. The contour of the bone is thinned, and over the vault are seen putty-finger impressions due to an atrophy of the inner table, and attributed to pressure by the convolutions. The suture lines are usually not seen. There may be an associated hyperostosis, either between the impressions, or in other parts of the skull, as in the ethmoid or in the sphenoid. The vessel markings are often widened and the vessel foramina enlarged. The frontal eminences are obliterated in the majority of cases, as are also the frontal and mastoid sinuses. The sella turcica may be exceptionally well delineated; it is often enlarged and displaced backward. The base of the skull shows important changes; the fossæ are usually deep and wide, the posterior fossæ forming, in some cases, as much as two-thirds of the base. The middle fossæ may be deepened, reaching in some cases a level as low as that of the posterior. The temporal regions are pushed outward, so that the temporal fossæ may be shallow or obliterated.



Fig. 6 (Case A380861). Antero-posterior roentgenogram of an oxycephalic head.



Fig. 7 (Case A259660). Lateral roentgenogram illustrating the spontaneous decompression sometimes seen in oxycephaly.

REPORT OF CASES

Case 5 (A380861), a boy, aged five years, had had a prominent forehead and exophthalmos since birth. When he commenced to walk, it was noticed that he was partially blind. He was the fourth child, and, while labor had been difficult, instruments had not been used. He had been breast-fed, and, except for slight difficulty in breathing, had developed normally. Three sisters and two brothers were normal. One uncle was known to have prominent eyes and strabismus.

This is one of a series of four cases of oxycephaly that I reported in 1922.

Case 6 (A259660), a boy, aged five years, illustrates (Fig. 7) the spontaneous decompression sometimes seen in oxycephalics, either in the parietal bones, where they may be large and symmetrical, or in the roof of the orbits. His deformity had been present since birth; the mass was first



Fig. 8 (Case A371150). Lateral roentgenogram of a case of oxycephaly larvée.

noticed nine months before coming to the Clinic, and had gradually increased in size. The strands of ossifying bone noted by Watts in one case, two years after he had made a decompression, are well depicted in this case.

Case 7 (A371150), a boy, aged ten years (Fig. 8), is an example of a type described by Bertolotti as *oxycephaly larvée*, in which changes in the skull are not so marked, but those of the orbits and base are diagnostic. The mother and one brother of this child showed moderate grades of a similar type of oxycephaly.

A striking feature, clinically, is that, although many of these patients have an idiotic appearance, the intelligence is unimpaired. The palate may be shortened and highly arched; cleft palate, anterior and posterior, has been noted, but is infrequent. Headache, and occasionally convulsions, may occur in the active stage of the disease.

Case 8 (A272457), a male infant, aged two months and ten days, was brought to the Clinic with a history of intermittent attacks of crying, usually at night, with a backward



Fig. 9 (Case A272457). Photograph of a baby, aged two months and ten days, with anencephalic head.

thrust of the head suggesting pain. They had developed in the latter two weeks. The child was well developed and overweight (Fig. 9), quiet throughout the day, and, except during the attacks, slept well. Roentgenograms (Fig. 10) revealed the flattening of the vault with the upward projection of the occipital bone. The diagnosis was made of *anencephalus*, and the child was taken home.

ACROMEGALY WITH SARCOMA OF THE PITUITARY.

REPORT OF CASE

Case 9 (A253290), a man, aged twenty-eight years, a native of Sweden, came to the Clinic, complaining of overgrowth of the bones, particularly of the head and face, quite rapid for the first year, and gradually progressive since. He was normal up to the age of twenty, and the overgrowth had become noticeable in the last six years, appearing first in the hands and lower jaw. About six years before examination, his left eye had suddenly become almost blind; there was slight improvement after two months, but since that time gradual decrease of vision. Examination of the eye revealed a bitemporal hemianopsia. The neurological diagnosis was acromegaly, and operation was advised for possible conservation or restoration of vision. A two-stage operation was performed, and a large tumor (weight 15

gm.) solid to the touch, and about 2 cm. in diameter, was found bulging between the optic peduncles and the commissure. On account of the size of the tumor, the capsule was opened, and a curette used to evacuate the contents. The pathologic diagnosis was sarcoma. Following the second operation the patient was up, about the hospital, and ready to be dismissed, when he developed a suppurative frontal sinusitis, and subsequently an encephalitis that resulted in a marked edema, thrombosis of the vessels of the brain, and death.

Necropsy revealed enormous development of the body frame and the body structures. The height was six feet four inches, and the weight 278 pounds. The feet and hands were twice the normal size. The skull was of tissue-paper thinness. The sella turcica measured 4 cm. transversely and anteroposteriorly, the walls were very thin, and there was erosion of the posterior clinoid processes.

A roentgenogram (Fig. 11) showed marked overdevelopment of the bones of the skull and face, with marked prognathism, thinning of the bone, and enormous frontal sinuses. The sella turcica was very large, and there was marked thinning of the posterior clinoid processes.



Fig. 11 (Case A253290). Lateral roentgenogram of an acromegalic head. This patient was operated on and the pathologic diagnosis was sarcoma of the pituitary.

thelio-psammoma (7x7x6 cm.) was removed from the left frontal lobe. The tumor arose from the dura just above the frontal sinus on the left side, and had eroded the bone. The patient recovered well from the operation, and was up and around the hospital when he suddenly developed an increased temperature, had a convulsion, and died within twenty-four hours.

Necropsy revealed internal hydrocephalus, and an acute septic cerebrospinal meningitis following craniotomy, and removal of endothelioma of the left frontal lobe.

OSTEOSARCOMA, INVOLVING BOTH ORBITAL CAVITIES.

REPORT OF CASES

Case 11 (A327297), a man, aged twenty-one years, came to the Clinic complaining of protrusion of both eyes. Five years before, he had been struck over the left eye with a baseball. Three months later he was examined elsewhere; at this time the left eye was protruding half an inch, and was still covered by the paralyzed lid; a fracture could be felt passing backward and outward across the roof of the orbit, and a hard mass was palpated half an inch back of the orbital ridge, and an inch from the nose. Operation



Fig. 10 (Case A272457). Lateral roentgenogram of an anencephalic head.

ENDOTHELIO-PSAMMOMA OF THE FRONTAL BONE.

REPORT OF CASE

Case 10 (A384300), a man, aged fifty-nine years, came to the Clinic, complaining of convulsions. For twenty-five years, following a severe blow on the head, he had suffered from nocturnal attacks of which he himself was not conscious. These were three or four years apart at first, and gradually increased in frequency until two years ago, when they occurred at weekly intervals. Since then the convulsions have been less frequent, and have been replaced by transient losses of consciousness, lasting from two to ten minutes, and gradually increasing in frequency. Memory for recent events had been poor, and the patient became incapacitated for his work three months before. The neurologic findings were blurring of the discs, especially the left; slightly irregular pupils; exaggerated deep reflexes, and slight to moderate inco-ordination with generalized tremor. Roentgenograms (Fig. 12) revealed a large osteoma in the left frontal region. At operation an endo-

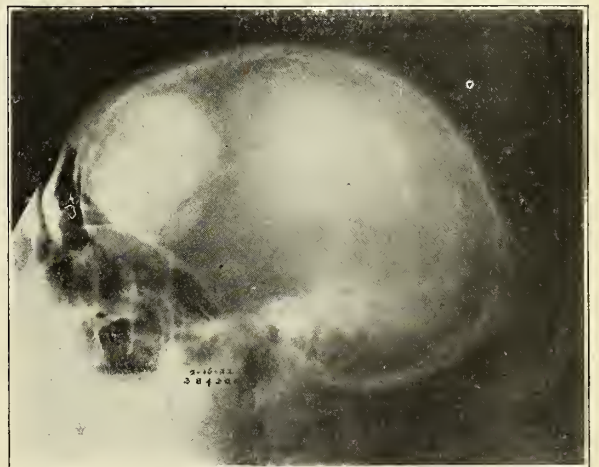


Fig. 12 (Case A384300). Lateral roentgenogram showing an endotheliopsammoma of the frontal bone.



Fig. 13 (Case A327297). Roentgenogram showing an osteosarcoma involving both orbital cavities.

elsewhere revealed a fracture of the anterior wall of the frontal sinus, with an extensive osteosarcoma behind, which was removed. Within a year there was evidence of recurrence in the left orbit, and in the right frontal sinus. Two months before examination at the Clinic, an acute infection developed in the right orbit, and has been draining since. The patient had an ulcer on the right cornea. Roentgenograms (Fig. 13) showed areas of increased density over both orbital regions. A diagnosis was made of osteosarcoma and radium treatment was advised.

Case 12 (A394202), a man, aged thirty-four years, came to the Clinic, complaining of swelling of the right frontal and temporal regions, with pain over the right eye, and exophthalmos. For thirty-two years the right occipital and frontal region had been prominent. Eight months before, a minute swelling (about 1 cm.) appeared in the middle of the supraorbital ridge and extended medially. Exophthalmos appeared six months before, with a depression of the

eyeball, accompanied by a feeling of tension in the eye. At about this time, vision in the right eye became impaired. Six weeks before, intermittent, burning, stinging pain commenced over the right eye. The occipital prominence was noted on examination here. The only finding of import in the examination of the eye was a complete proptosis of the right eye from the orbit. The neurologic examination was essentially negative. A roentgenogram (Fig. 14) revealed a large tumor involving the whole occipital bone, with little increase in density, and a tumor of greater density, involving the frontal area. A diagnosis of osteosarcoma of the right frontal bone was made and the patient returned to his home. Word was received six months later of his death, and no post-mortem examination was made.

Case 13 (A315208), a girl, aged fourteen years, came to the Clinic, complaining of a tumor of the left occipitoparietal region of two years' duration. Two years before, she had fallen on the ice and struck the back of her head. Nine months before, she first noticed a small pimple at the site of the tumor. This gradually increased in size until it reached a diameter of from 2 to 3 cm. Two months before,

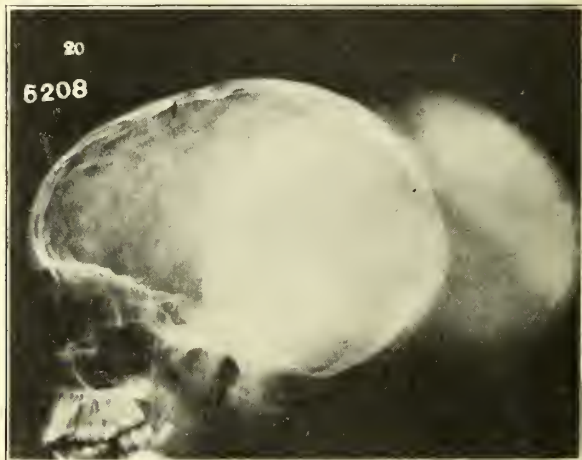


Fig. 15 (Case A315208). Lateral roentgenogram illustrating a sarcoma of the left parietal bone eroding the bone, evidence of increased intracranial pressure, and a large hernia of the cerebrum.

an operation had been performed elsewhere, on which no data were available. Neurologic examination showed a general weakness of all muscles on both sides of the body. Examination of the eye disclosed a condition resembling a contracted field rather than true hemianopsia; when an object was held to the right side of the patient, the left eye could not see it until the object was brought almost directly in front. A roentgenogram (Fig. 15) showed evidence of increased intracranial pressure, with a large hernia of the cerebrum from the parieto-occipital area. A diagnosis was made of sarcoma of the left parietal bone with erosion and hernia of the cerebrum. The patient was dismissed with the suggestion that Coley's serum be used in the hope of delaying the progress of the tumor.

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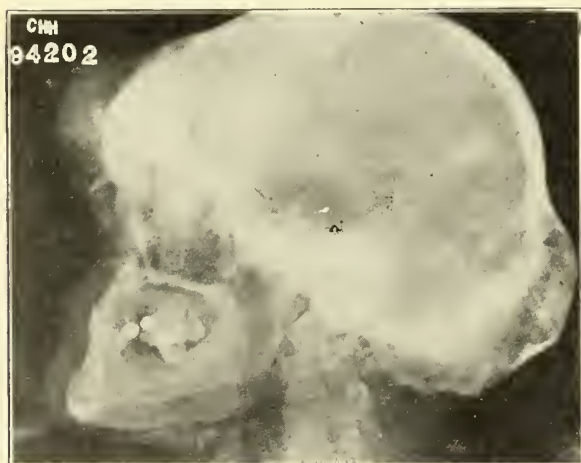


Fig. 14 (Case A394202). Lateral roentgenogram revealing an osteosarcoma of the right frontal bone and an osteoma of the occipital bone.

MECKEL'S DIVERTICULUM AS AN ETIOLOGICAL FACTOR IN INTESTINAL OBSTRUCTION: REPORT OF THREE CASES*

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Early in embryonic development the digestive tract is formed by an infolding of the yolk sac. The connecting canal which the embryonic intestine has with the yolk sac is termed the omphalomesenteric or vitelline duct. This duct is accompanied by an artery and two veins which maintain the circulation between the yolk sac and intestinal tract. When the embryo is about five weeks old the duct has no further function and normally disappears. The vessels simultaneously disappear. The vein later becomes the portal vein, while the artery becomes the superior mesenteric artery. When an entirely normal development exists at birth, all traces of both duct and vessels have disappeared.

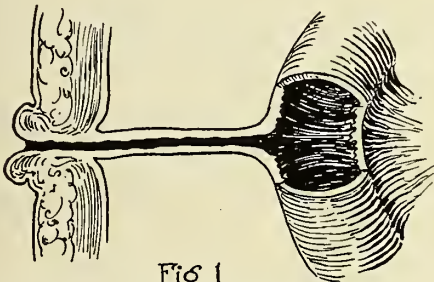


Fig. 1
Patent omphalomesenteric duct

In about 2 per cent of all persons some form of remnant of this duct remains. Its vessels likewise may persist as a fibrous cord, usually attached to the end of the remaining duct. The persistence of these embryonic structures in one form or another may give rise to interesting phenomena, depending upon the structure remaining:

1. If the omphalomesenteric duct is patent throughout (Fig. 1), feces and gas may escape at the umbilicus at birth or when the cord drops off, or a fistula may later develop.

2. If the canal is obliterated and a portion of the mucosa or a remnant of the duct persists at the

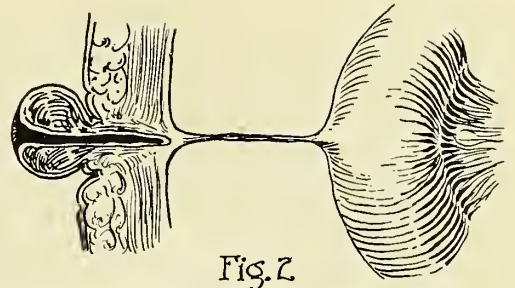


Fig. 2
Remnant of omphalomesenteric duct
at umbilicus

navel, a mucous polyp may be evident with a protruding red nodule of mucosa discharging a mucous material. There may be only a small remnant of mucosa at the navel or it may persist for a varying distance (Fig. 2). This is not at all an uncommon condition. Two such cases were observed at the University Dispensary in 1918.

3. The duct may be closed at both the umbilical and intestinal ends and patent in its mid-portion, in which instance a cyst may develop (Fig. 3). These cases are rare.

4. When the duct remains patent at the intestinal end, it is commonly known as Meckel's Diverticulum (Fig. 4). This is the most common form of remnant of the omphalomesenteric duct and is present in about 2 per cent of all persons.¹

In 1812 Meckel first accurately described its embryologic origin and the diseases to which it was subject. Its presence, however, had been described many years previous.

Meckel's diverticulum is usually found in the lower ileum from 1 to 3 feet from the ileo-cecal junction. It has a great variety of sizes and shapes and its distal end is often attached to the abdominal wall at the umbilicus, either by a remnant of its obliterated portion or by the obliterated omphalo-

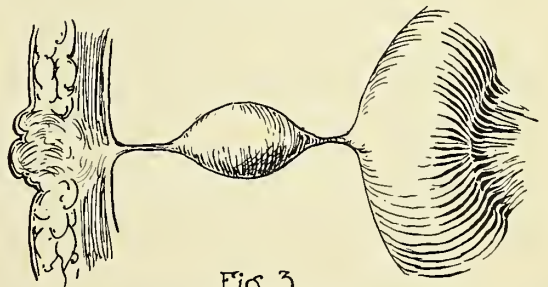


Fig. 3
Omphalomesenteric duct closed at both ends;
patent in mid-portion

*Presented before the Southern Minnesota Medical Association, Mankato, December, 1922, and the Minneapolis Surgical Society, December 7, 1922.

mesenteric vessels. It is usually attached to the bowel directly opposite the mesentery but is not infrequently attached near the mesenteric border and may itself have a leaf of mesentery (Fig. 5). Not infrequently remnants of the omphalomesenteric vessels extend out over its tip and are attached to the umbilical region (Fig. 6). For some unknown reason, Meckel's diverticulum is present three times as often in males as in females.

Considering the fact that Meckel's diverticulum is present on an average of about 2 per cent of all persons, it is probably not especially liable to cause trouble. I believe it is a general impression with the profession that it is of rare occurrence. However, in a review of the literature on this subject, the reports are numerous. Undoubtedly, there are several times as many cases that have never been reported.

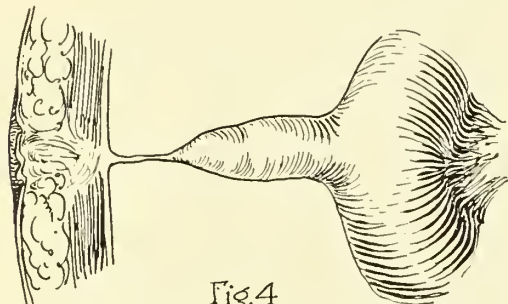


Fig. 4

Meckel's diverticulum; duct patent at intestinal end and attached to umbilicus by a fibrous remnant of outer portion

In general, it may be subject to any of the diseases common to the intestinal tract. A diverticulitis occurs in much the same manner as an appendicitis, for which it is usually mistaken in diagnosis. A great variety of foreign bodies have been found pocketed in it and not infrequently give rise to inflammation and perforation. However, by far the most common disturbance is *intestinal obstruction*.

There are a great variety of ways in which this may be brought about:

1. When the diverticulum is attached to the abdominal wall, it may by its traction cause an angulation at its junction with the intestine, or the intestine, being suspended in this way, may rotate on a fixed point, causing a volvulus, or a loop of free bowel may twist itself about the cord attached to the diverticulum.

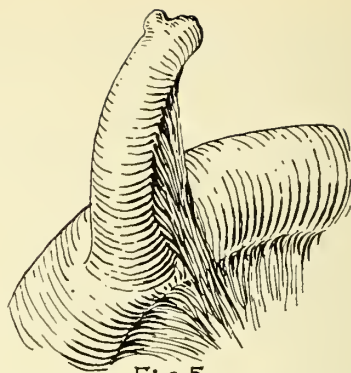


Fig. 5

Meckel's diverticulum; attachment at mesenteric border and mesodiverticulum
(Dr. James A. Johnson's Case II)

2. When there is a long diverticulum or a cord is attached to its tip floating free in the abdomen, it may become adherent to another loop of bowel or to the mesentery or omentum, thus forming a band underneath which a portion of the bowel becomes strangulated. The diverticulum or cord attached to its tip not infrequently knots itself about a loop of bowel almost as accurately as if it had been carefully tied. The free end of the diverticulum may become adherent in a hernial sac.

3. A diverticulum becomes invaginated into the bowel, causing an intussusception.

4. A diverticulitis or congenital stricture may obstruct the lumen.

It is difficult to ascertain just what percentage of intestinal obstruction is due to Meckel's diverticulum. Halstead² estimates that in 991 cases of intestinal obstruction collected by various authors 6 per cent were caused by this remnant, while Griffith³ cites Barnard's 669 cases of obstruction by bands, occurring in the London Hospital during

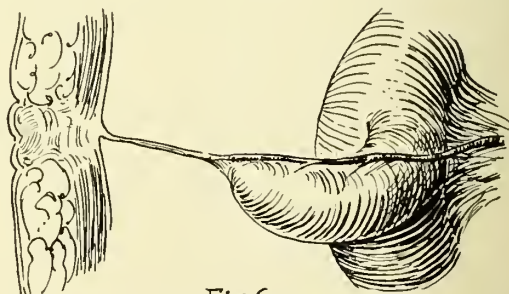


Fig. 6

Remnant of omphalomesenteric vessel

thirteen years, in which only 3.14 per cent were due to the diverticulum.

The most common form of obstruction is brought about by a constricting band of the diverticulum and its cord. Wellington,⁴ collecting 326 cases of Meckel's diverticulum, found that 144 were obstructed in this manner, 59 by intussusception and 9 by volvulus. Porter⁵ collected 184 cases, 101 of which were obstructed by bands, 20 by intussusception and 8 by volvulus.

The classical manner in which an intussusception occurs is by an invagination of the diverticulum into the lumen of the bowel. This is then caught in the peristaltic wave and the bowel becomes invaginated at the attachment of the diverticulum.

The diverticulum may find its way into a hernial sac and become adherent, causing an angulation or twisting of the bowel, which results in an obstruction. Wellington⁴ reports twenty-seven cases in which it was found as part of the hernial contents, in many instances causing strangulations. Porter⁵ reports twenty-one such cases in which the diverticulum was the cause for immediate operation in all but one.

When the diverticulum is patent throughout its entire length, it occasionally happens that the bowel prolapses through the opening at the navel, causing a strangulation. Porter⁵ reports two such cases in his collection of 184 diverticuli.

There may be a congenital stricture of the ileum at the site of attachment of the diverticulum. Such a case is reported by Cheyne.⁶ A diverticulitis with suppuration has formed adherent loops of bowel, producing obstruction.

It is natural to suppose that these mechanical interferences would occur at an early age. However, in 184 cases of all types of obstruction due to Meckel's diverticulum, Porter³ gives the average age as twenty-one years, two months. Wellington⁴ found in a collected series of 59 cases of intussusception by the diverticulum that only 10 per cent occurred during the first two years, and that the average age was fourteen years. It may occur at any age, the range being seven days to eighty years.

The symptom complex corresponds to that found in any mechanical obstruction. In reviewing numerous case reports it was often noted that the initial pain was located at the umbilicus. This is probably present in many of those cases in which the diverticulum is attached to the inner abdominal wall at this point.

The diagnosis of Meckel's diverticulum is rarely, if ever, made before operation. Other congenital malformations or the history of a discharging umbilicus may give a clue.

The mortality from obstruction by Meckel's diverticulum is high, ranging from about 60 to 70 per cent in various groups of cases collected. Porter⁵ reports 60 per cent; Halstead,² 68.1 per cent; Berard and Delore,⁷ 72.3 per cent. It is very apparent in most cases that the high mortality is due to lack of early diagnosis and immediate surgical interference. Meckel's diverticulum is said to have greater potential danger than the appendix. It should therefore be removed if found during the course of abdominal operations.

From this review, it would seem that intestinal obstruction due to Meckel's diverticulum is not at all of uncommon occurrence and frequent enough to warrant the surgeon's keeping constantly on guard.

It is with this in view that I report the following cases:

Case 1.—Master M. D. Male, age 12 years, schoolboy. Previous history negative except for scalp wound three years previous.

Previous Complaint: On July 9, 1916, at 9 A. M., he was suddenly seized with abdominal cramps and vomited several times. This all disappeared after an anodyne and at 3 P. M. he was up and about. July 19th, shortly after eating his supper, he began to complain of abdominal cramps. He was kept awake all night with severe cramps and repeated vomiting; repeated cathartics and enemas were given without result. The following day he began to improve and July 22nd he was up and about. On the morning of July 23rd, he went to the kitchen for his breakfast and was suddenly seized with a pain in the region of the umbilicus. This was so sudden and so severe that he fainted. The pain continued and he began to vomit. I was called in consultation at 5 P. M. by Dr. S. V. Hodge. On examination, the abdomen was very distended and he was vomiting bile; pulse 120; temperature 99.2. A diagnosis of intestinal obstruction was made and he was at once removed to the hospital.

Operation: On opening the abdomen, a Meckel's diverticulum was found about 18 inches from the ileo-cecal junction. The tip of this and a fibrous band had become adherent to the root of the mesentery just above the promontory of the sacrum. A loop of small bowel had passed under this and had become obstructed (Fig. 7). Because of the critical condition of the patient, the diverticulum was not removed but inverted into the bowel and closed with a purse-string suture.

Post-operative: The pulse could not be counted when he left the operating room; for three days it remained 160 to 170. On the third day the bowel contents were syphoned off and he rapidly improved and had an uneventful recovery.

Case 2.—No. 19413. Male, aged 64, admitted to the University Hospital July 15, 1920, with right inguinal strangulated hernia.

Previous History: Right inguinal hernia since childhood. Pneumonia forty years ago. Operation for appendicitis five years ago.

Present Illness began the morning of July 13, 1920, at which time he noticed that his hernia had become much larger. It soon began to pain. The pain became severe and he vomited twice. He had a large normal stool during the day. This pain continued and July 14th he was unable to produce a stool. He was able to walk into the hospital.

Examination revealed a large scrotal hernia on the right side which could not be reduced. Temperature 98.6; pulse 95; W.B.C. 5,000. Urine showed trace of albumin. Immediate operation was advised.

On operation under local anesthesia, about two feet of ileum were found dilated and adherent to the sac by fibrous exudate. The bowel was delivered into the wound. A Meckel's diverticulum was found firmly adherent to the bottom of the sac and covered with exudate as if inflamed (Fig. 8). It was about 2.5 inches long and located about 20 inches from the ileo-cecal junction. It arose somewhat from the lateral aspect of the bowel and had an individual mesentery. Its diameter was nearly that of a normal ileum.

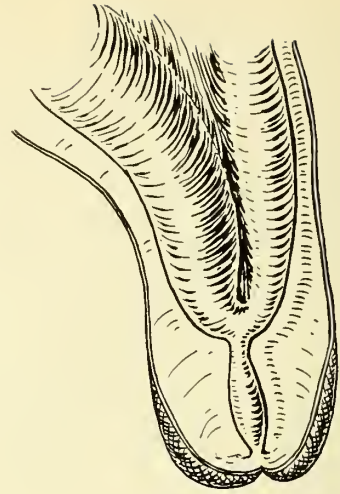


Fig. 8

Meckel's diverticulum adherent to sac of inguinal hernia causing angulation of ileum with obstruction.

(Dr. James A. Johnson's Case II)

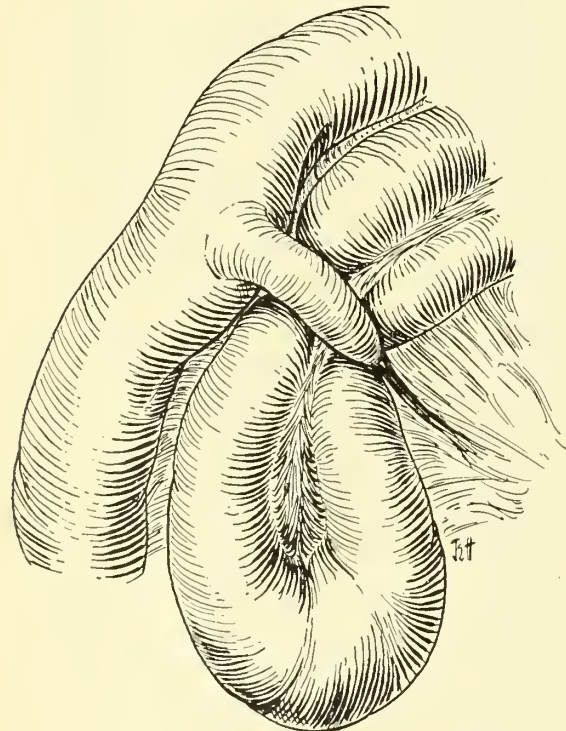


Fig. 7

Tip of Meckel's diverticulum with obliterated cord attached to root of mesentery; loop of small bowel strangulated underneath.

(Dr. James A. Johnson's Case I)

The tip was rounded and contained no fibrous band. The diverticulum was removed and the stump inverted into the bowel. A Bassini hernia repair was done. The patient had an uneventful recovery. The pathological report was "acute diverticulitis."

The diverticulum had evidently become adherent to the bottom of the hernial sac during its inflammatory attack and in this way caused an angulation of the bowel, producing an obstruction.

Case 3.—No. 5040. Male, age 8 months, well nourished and always in good health.

Present Complaint: On the morning of October 31, 1921, he awoke at 6 A. M., fretful and very restless. At 7 A. M. he was suddenly seized with abdominal pain. He doubled up, was wet with perspiration and very pale. He did not seem to be in great distress but vomited all food taken during the day. There was fair result from an enema that evening. He was removed to the hospital and the following day I saw him in consultation with Dr. Rood Taylor and Dr. Martin Ott. The child had been fretful during the night, but had slept at intervals. Temperature 100; W.B.C. 14,000. No vomiting. Nothing had been given by mouth. There had been no stools and no evidence of blood from bowel. The abdomen was moderately distended. There was no palpable mass. Fluoroscopic examination of the chest was negative. No mass could be visualized in the abdomen by x-ray. During the afternoon while he was asleep, a palpable mass could be made out in the right abdomen. A diagnosis of intussusception was made and operation was advised.

Operation: On opening the abdomen, a large intussusception was found in lower ileum. The bowel was hopeless-

ly gangrenous and a resection was made with an end-to-side anastomosis of the ileum to the cecum. On examination of the specimen (Fig. 10), a Meckel's diverticulum was found about 20 inches from the ileo-cecal valve. A long fibrous band was attached to its tip. This band had become adherent to the bowel below the attachment of the diverticulum. The lowest point of intussusception was at the attachment of this band to the bowel. It is therefore probable that the band had been pulled in during a peristaltic wave and started an infolding which pulled the diverticulum in (Fig. 9).

The child died during the night.

In a fairly careful search of the literature, I fail to find a similar case.

Intussusception due to Meckel's diverticulum is relatively uncommon. Only thirteen cases are reported in the literature in the ten years, 1911-1921. The classical way in which it occurs is by an invagination into the lumen of the bowel; the peristaltic wave attempting to force it onward invaginates the portion of the bowel to which it is attached.

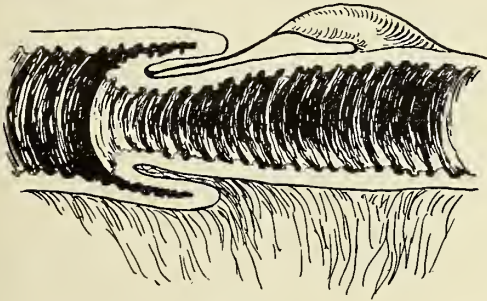
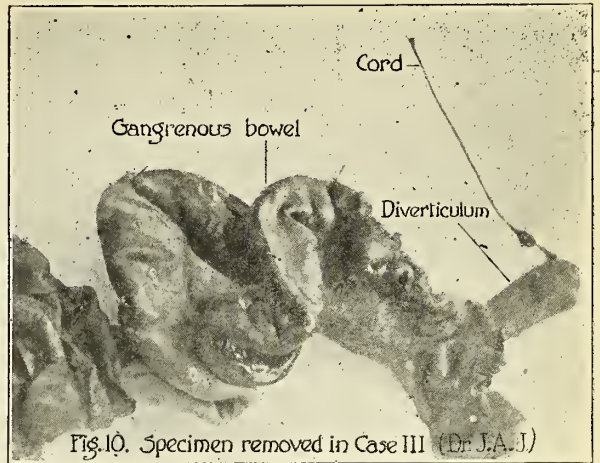


Fig. 9

Band from Meckel's diverticulum adherent to ileum - band and diverticulum being drawn in by peristaltic wave, causing intussusception and obstruction (Dr. James A. Johnson's Case III)

CONCLUSIONS

1. Meckel's diverticulum is present in about 2 per cent of all persons.
2. It is probably an etiologic factor in over 2 per cent of all mechanical obstructions.
3. The average age at which obstruction occurs is twenty-one years and two months, although it may occur at any age, the range being seven days to eighty years.
4. Symptoms are those of any mechanical obstruction.
5. It has a greater potential danger than the



appendix and should be removed if found during the course of abdominal operations.

6. It is one of the important causes of intestinal obstruction and occurs frequently enough to warrant the surgeon keeping constantly on guard.

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DISCUSSION

DR. HARRY P. RITCHIE, St. Paul: This is no place to recite cases, but I am sure that you will support me in the statement that a pre-operative diagnosis of Meckel's diverticulum is very rare. The symptoms are usually those of intestinal obstruction, or so often, as Doctor Johnson has said, of appendicitis. The mortality and seriousness it seems to me in many of these cases has been the result of overlooking the true situation. If it is an intestinal obstruction and we find that (and we must look for it and find it), it presents the same problem that any ordinary intestinal obstruction does. But the thing that impresses me is that the cause is overlooked. We have an idea that it is an acute appendix, we make an exploration, remove the appendix and overlook the diverticulum. I can remember two or three patients who had secondary operations when the Meckel's diverticulum was found and the situation was too late for relief. I think the demonstration of the embryology gives us a lead in the surgery of this condition. When we do not find in the appendix sufficient pathology to satisfy ourselves in a given case further investigation should be made. These diverticuli may be anywhere up to the stomach. If we make it a rule in these cases in which no inflammation of the appendix has been found to examine the distal 18 inches of the ileum I am sure we will find some of these cases that are occasionally overlooked.

DR. A. R. COLVIN, St. Paul: Doctor Johnson has had certainly a very unusual experience in this question of Meckel's diverticulum. When Meckel's diverticulum causes as high as five or six per cent of all cases of intestinal obstruction we can understand how timely Doctor Johnson's paper is. As further illustrating the dignity of the subject I was very much interested in the fact that Doctor Cullen of Baltimore a few years ago wrote a book of seven hundred pages on diseases of the umbilicus, and of course most of these diseases of the umbilicus are due to errors of development in that region. The errors of development as Doctor Johnson has shown us may consist of any lack of development, failure of closure, etc.

One of the points that I think is very important and which may make the percentage of intestinal obstruction due to vitelline remnants even greater is that some of the cases of intestinal obstruction that we cannot account for may be due to a band running from either the umbilicus or bowel and which may later become adherent to any part of the intestinal canal. Treves in his very valuable article on intestinal obstruction calls attention to this fact. The yolk sac from which Meckel's diverticulum springs or is a remnant, it is interesting to note, is really an extra-fetal structure and the vitelline duct really grows into the fetus and this explains, I think, the reason that in some cases, although Meckel's diverticulum usually originates anywhere from 1 to 3 feet from the ileo-cecal valve as a usual thing, still it may originate anywhere from the ileo-cecal valve to the stomach. Cullen quotes the fact that histologically stomach structures have been found in some of these maldevelopments. The symptoms, of course, as Doctor Johnson has said, are those of any obstruction. An early diagnosis of intestinal obstruction is very difficult. Once having realized or suspected intestinal obstruction I am more and more impressed with the necessity for repeated observation. The saying that "One has to almost live with these patients in order to make up one's mind quickly enough that intestinal obstruction is present," is very true. Once having diagnosed intestinal obstruction and operated for it, then, of course, the value of such a paper as the Doctor's is apparent, because of the different pathology due to Meckel's diverticuli or to the errors in development about the umbilicus. One cannot intelligently deal with the obstruction unless one has this embryologic foundation. It may have some bearing, too, or some influence on the operative procedure. If 5 or 6 per cent of all cases of obstruction are due to Meckel's diverticulum, and if the appendix is the cause of a great many others, then in the very large number of all cases it will be important to approach the region of greatest probability and that is the right iliac fossa, and so the incision had better be made in unknown cases in the right iliac fossa, because one can tell at once by inspection of the cecum whether the obstruction is in the small bowel. These Meckel's diverticuli cases will usually be small bowel obstructions, and consequently in the majority of instances have a rather violent onset.

As to whether or not Meckel's diverticulum should be removed whenever found it seems to me that the condition of the diverticulum should be taken into some account. There would not be any doubt at all in the presence of

pathology or if there were any bands or strings attached, or any holes in the mesentery, as that is another cause of obstruction. The intestine may get caught in the hole in the mesentery; but if, as is so often the case, the diverticulum is represented by a mere teat-like projection as it were, quite widely open into the intestine, then I should doubt the advisability, or necessity rather, of its removal.

DR. J. A. JOHNSON (closing): I wish to make just one more comment about the last case. This child did not appear to be very sick until a short time before the operation. He had ceased to vomit. There was never evidence of blood in the stool. His abdomen was repeatedly palpated by four different men and no mass could be made out. While he was asleep, a careful palpation first revealed the mass.

It is so important to make an early diagnosis in intussusception that after this when there is any doubt I shall feel justified in giving the patient a whiff of ether to relax the abdomen enough to definitely rule out this condition. If intussusception has progressed to the point where resection becomes necessary, it means a very high mortality.

FUNCTIONAL TESTS IN HEART DISEASE*

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The abandonment of the theory of back-pressure as a cause of cardiac decompensation and the realization that the condition of the heart muscle is the most important index of its efficiency has stimulated many a worker to devise a test, or combination of tests, which would determine the functional capacity of the heart. Numerous methods have been suggested, but none has proved satisfactory, and the problem remains as great today as it was in the past.

It is my purpose to review briefly some of the tests which have been devised, and to record my experiences with the exercise tolerance test, commonly known as the Barringer test.

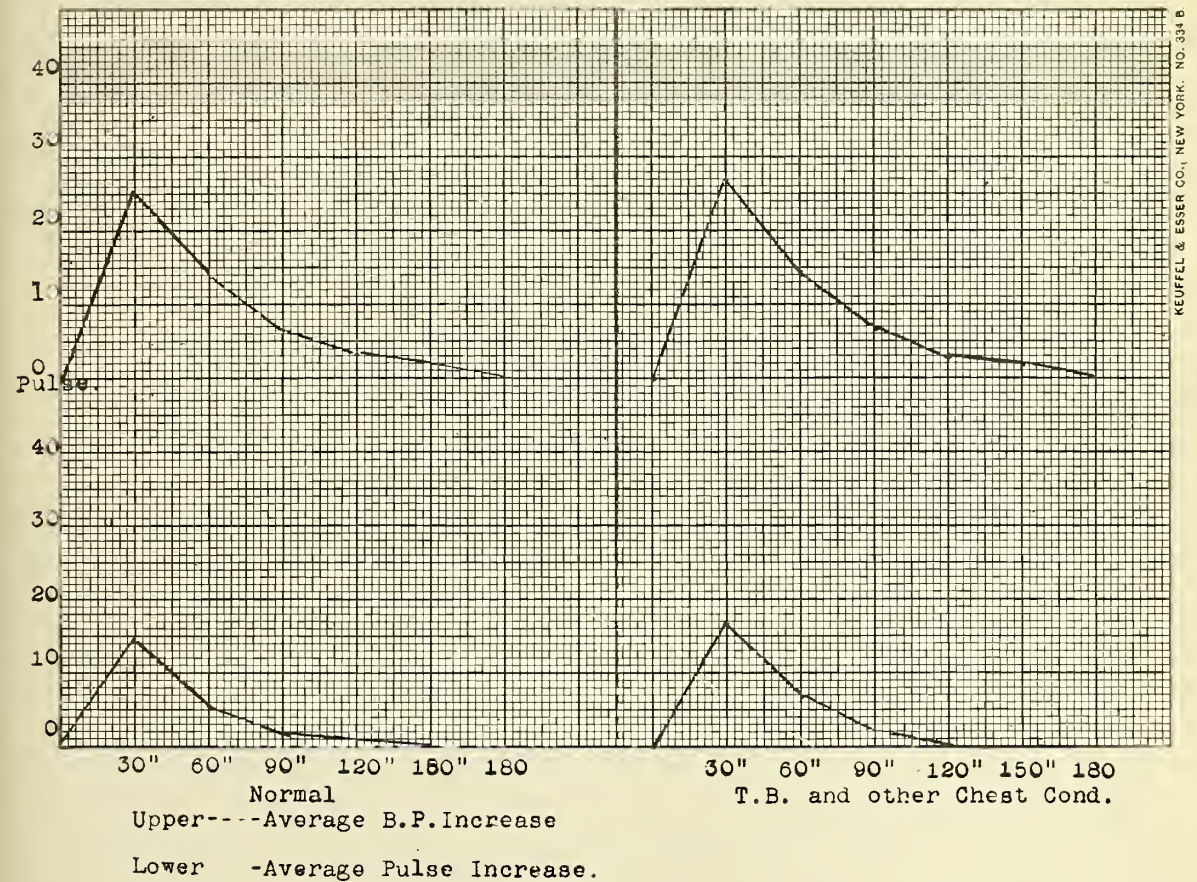
Four fundamental factors must be taken into consideration in any study of the adequacy of the circulation. These are: the cardiac motive power; the vasomotor system; the nervous system; and the condition of the other organs of the body. These factors are variable in character and closely related

*Read before the Consulting Medical Staff of the Lymanhurst School for Tuberculous Children, January 23, 1923.

to each other. A disturbance of function in any one of them will affect the efficiency of the circulation. Cardiac decompensation is a result of the impairment of the efficiency of the heart muscle itself, and is not caused by anatomical changes that have taken place in the heart valves. It is true that valvular lesions indirectly aid in producing decompensation, but only after the efficiency of the heart muscle has been impaired by the infectious process. As evidence of this, Barringer¹ cites a series of 154 cases of chronic heart disease and shows that 117 cases showed a fever of varying degree, running a course of from three days to many weeks, and that

mining its functional capacity. A heart that is markedly enlarged and dilated will have a much smaller reserve force than a heart that is slightly enlarged or normal in size. The effect of exercise on the size of the heart has also been studied by means of six-foot x-ray plates, taken before and after exercise, but so far, no definite information has been obtained by this method.

The electrocardiograph is of some aid in determining functional capacity, but only in cases which show delayed conduction time, arborization and branch block and complete block. It helps to differentiate these conditions from the simpler myo-



sixty-nine patients showed an increase above normal of the polymorphonuclear leucocytes.

The various tests to be described may be classed into diagnostic tests, respiratory tests and exercise tests.

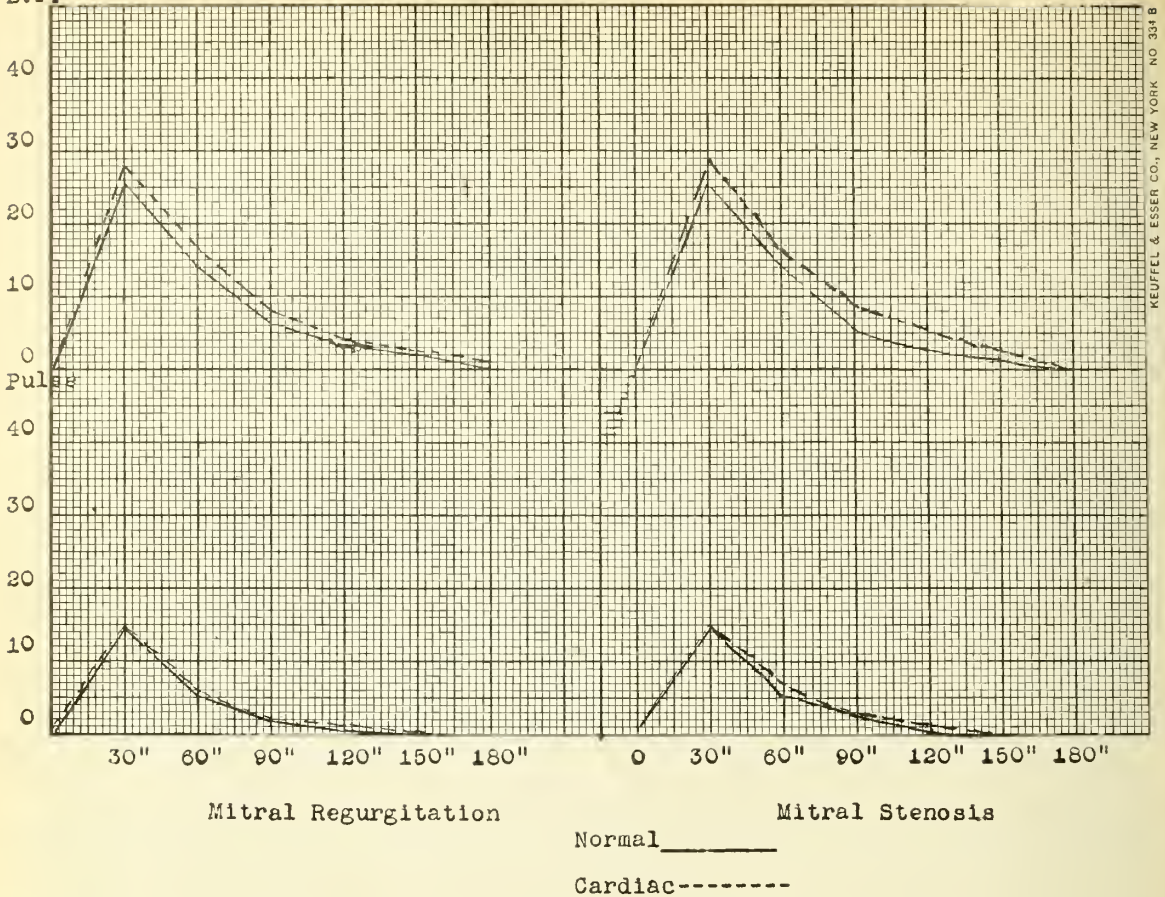
The *diagnostic tests* include the roentgen ray and electrocardiographic examinations.

The size of the heart, as revealed by roentgenogram or fluoroscopic examination, aids us in deter-

mining its functional capacity. A heart that is markedly enlarged and dilated will have a much smaller reserve force than a heart that is slightly enlarged or normal in size.

Respiratory Tests.—Of the *respiratory tests*, only two will be mentioned. Stengel, Wolfarth and Jonas² have experimented with the breathing of air of lowered oxygen tension as a test for circulatory function. The apparatus used was very complicated and the results unsatisfactory. They conclude that the test is of little value. The determination

B.P.



of the vital capacity has been used very much of found that of the eighty patients who did not show late as a means of estimating cardiac efficiency. Peabody³ and others claim that there is a close relationship between the clinical condition of cardiac decompensation and the vital capacity of the lungs. They state that patients with a vital capacity of 70-90 per cent of normal become short of breath on unusual exertion. If the vital capacity is reduced to from 40-70 per cent, the patient is very much limited in his activities and becomes dyspneic on slight exertion. If the vital capacity is below 40 per cent the patient is usually decompensated and confined to bed. These observers also claim that the vital capacity is of value in prognosis, saying that it rises as the patient improves, and falls as the decompensation increases. Brittingham and White⁴ have used the test routinely in all medical ward cases at the Massachusetts General Hospital. They have reported a series of 144 patients, forty-eight of whom had some cardiac complication, sixteen some pulmonary involvement, and eighty no

pathological condition in the heart and lungs. They any cardiac or pulmonary disease 50 per cent had a vital capacity 20 per cent or more under normal. In the pulmonary group all had readings which fell below 60 per cent of normal. In the cardiac group, those patients who had no congestive heart failure had normal vital capacities. They found that the test gave them little help in diagnosis or prognosis, as improvement in vital capacity seemed to lag behind clinical improvement, and also that the vital capacity and exercise tolerance tests were markedly at variance in 14 per cent of their cases. The only conclusion that can be drawn from these findings is that the vital capacity is useful because it adds to our knowledge of the condition and accurately measures the amount of dyspnea. But cardiac failure is not always proportional to the amount of dyspnea, therefore the test cannot be relied upon as an accurate means of determining the heart's efficiency.

Exercise Tests.—The response of the heart to a definite amount of exercise has been used perhaps

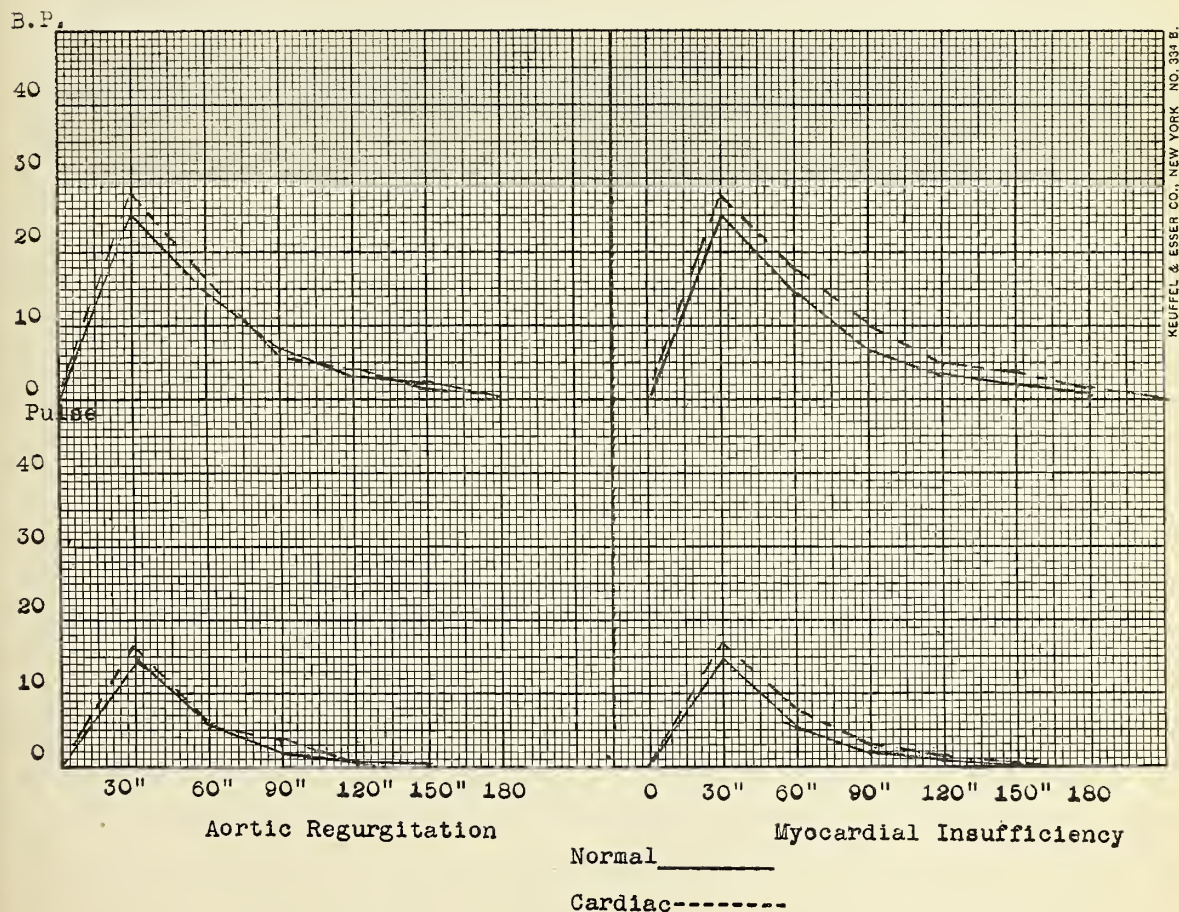
more than any other method in determining its efficiency. Various tests have been devised, such as climbing stairs, hopping, swinging dumb-bells, and doing a measured amount of work on an ergostat. The pulse and blood pressure have been studied during the exercise, and from two to five minutes after the exercise. In this way, attempts have been made to classify patients as to their cardiac efficiency.

The effect of exercise on the pulse rate was perhaps the first method to be studied as to its functional significance. Medelsohn,⁵ using an ergostat; Selig,⁶ using the stair climbing test; and Kahn,⁷ using the hopping test, found that the pulse increases from twenty to twenty-five beats after an exercise of three thousand to five thousand foot pounds and returned to normal within two or three minutes. They assert that the greater the amount of work done with a prompt return to the normal rate the greater is the functional capacity of the heart. Graupner,⁸ using an ergometer, made cer-

tain groups perform a definite amount of work and studied the blood pressure during and after the work. He concluded that:

1. If the blood pressure fell, the heart was insufficient for the work.
2. If the blood pressure remained constant, the heart was sufficient for the work.
3. If the blood pressure rose at first and then returned to normal the heart possessed compensatory power.
4. If the blood pressure rose, fell rapidly, and did not again tend to rise, the heart was fatigued.

Katzenstein's⁹ method consisted of compression of the iliac arteries for two and one-half to five minutes. The work of the heart was increased by this. He found that in normal hearts there was an increase of 5 to 15 mm. of mercury; in hypertrophied compensated hearts, the blood pressure rose 15 to 40 mm. of mercury; in slightly decomp-

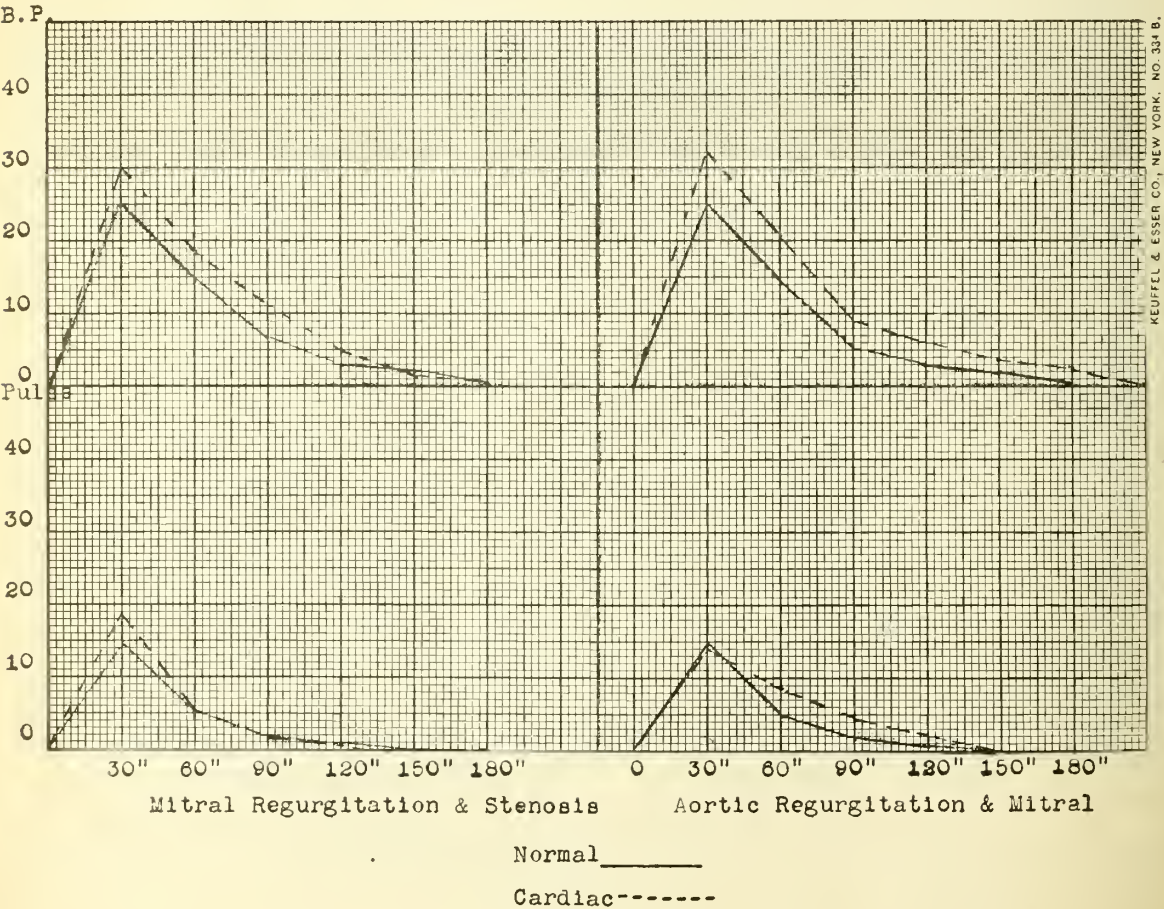


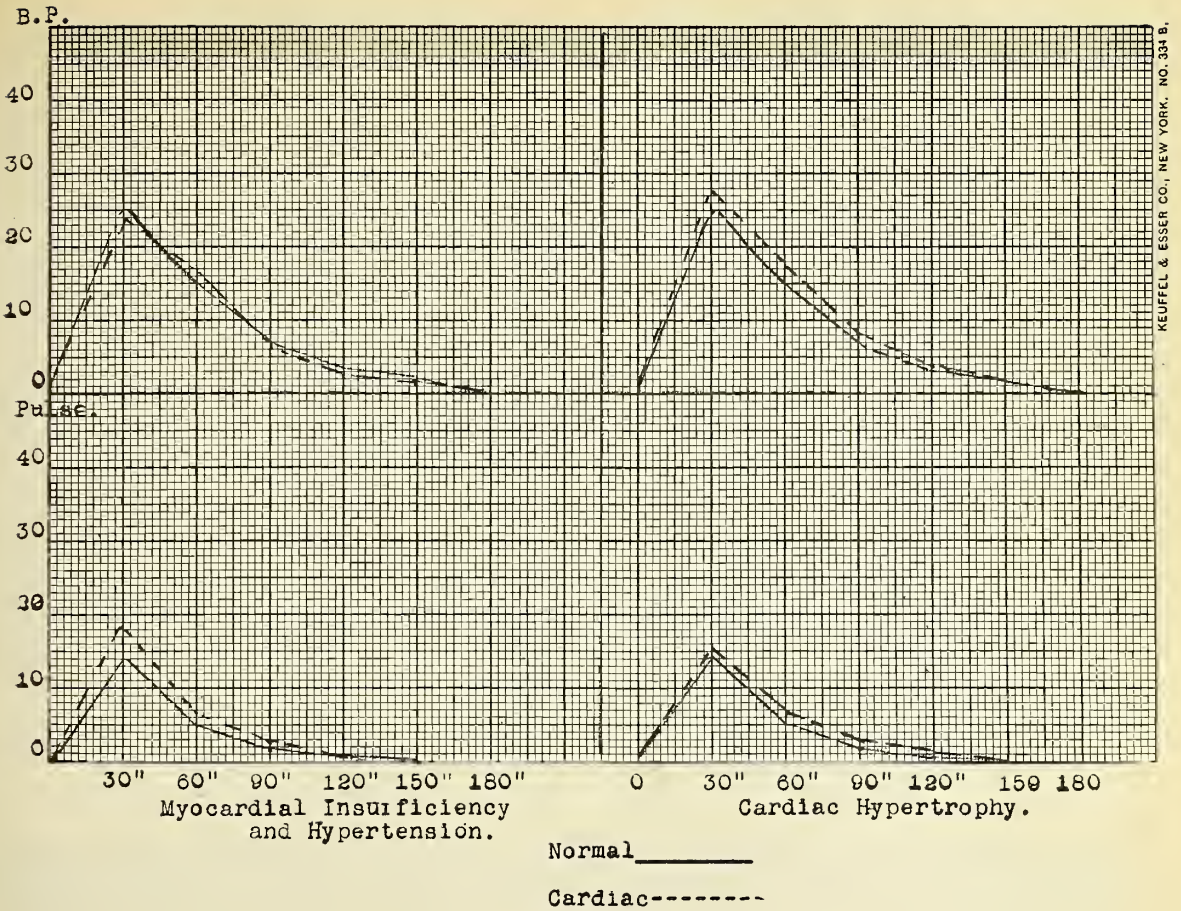
compensated hearts, the blood pressure remained unchanged; and in markedly decompensated hearts, the blood pressure fell and the pulse rate increased. Sahli's¹⁰ method of determining heart function consisted in the use of an instrument known as the sphygmobolometer. With this instrument he would measure the energy of the single pulse waves, and in this way try to determine the heart's efficiency. Schneider,¹¹ by an association of many of these methods, has tried to establish a scale of cardiac efficiency. He notes the variations in pulse and blood pressure on changing from the reclining to the erect posture and the increase of the blood pressure and pulse after a mild exercise. The exercise consists of stepping on a chair 18 inches high five times in fifteen seconds. He then grades the patient according to the response to each part of the test.

Barringer,¹² using a modification of Graupner's⁸ method, studied the blood pressure and pulse after a measured amount of work. His work is based

on the following theory: "Muscular work causes an increased output of the heart and a rise in blood pressure. The rise in blood pressure is caused mainly by the increase of the CO₂ content of the blood. This causes a stimulation of the nerve centers controlling the suprarenal glands, resulting in an increase in the adrenal content of the blood. This causes a constriction of the splanchnic vessels and a rise in blood pressure. Up to a certain limit the blood pressure continues to rise as the work increases. Then it becomes more difficult for the heart to empty itself and an insufficiency occurs. If the work is stopped, then the blood pressure falls and the heart begins to work more efficiently against the lowered pressure and soon again empties itself completely at each stroke and the blood pressure begins to rise again."

Upon this "delayed rise" Barringer¹² bases his test. He shows that a delayed rise is noted whenever the work overtaxes the heart, also that exercise acts upon a damaged heart exactly as it does





on a normal heart. As the reaction occurs only when the heart capacity has been overtaxed, we can see that the sphere of its usefulness is greatly limited.

I have used the test routinely on a group of 678 ex-soldiers referred to me for cardiac examination and treatment. Among these were 276 normals, 332 patients with definite cardiac disease, and 30 patients with pulmonary disease. The exercise consisted of hopping on the toes for one minute at the rate of sixty to ninety times to the minute. The blood pressure and pulse were taken immediately after the exercise and at intervals of thirty seconds for three minutes. A delayed rise was noted in a very few cases. The remainder showed very little variation from the normal. The blood pressure showed a tendency towards a greater increase immediately after exercise in those conditions in which the damage to the heart was greatest.

The pulse showed very little variation in any of the conditions, and usually returned to normal in

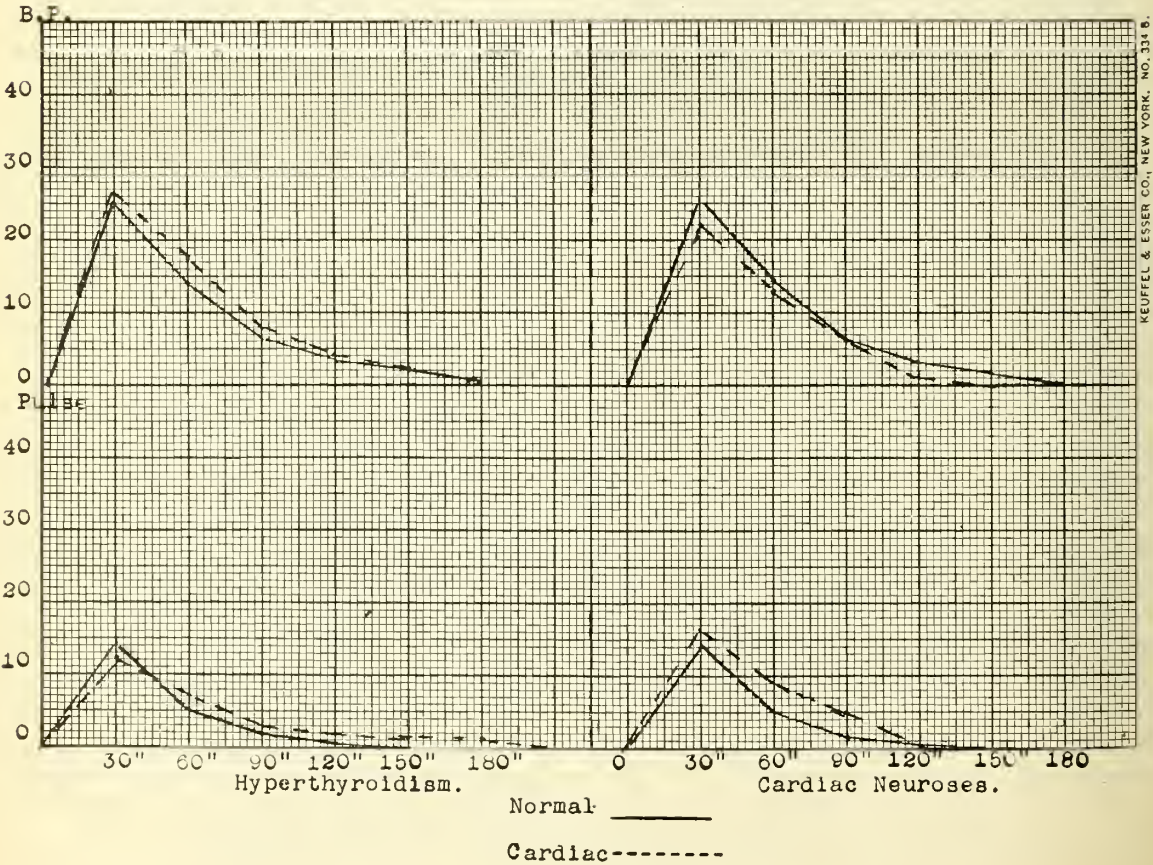
one and one-half to two minutes. The figures in the accompanying tables illustrate this clearly. (Tables 1 and 2.) They show, primarily, that a study of the pulse rate after exercise as a test for cardiac efficiency is of very little value; secondarily, that no measured amount of work can be used as an exercise tolerance test in all cases. It is probable that if a greater amount of work was used in this group, a larger number of cases would have shown the characteristic "delayed rise" of Barringer,¹² but the value of the test should be in the differentiation between the normal and the slightly decompensated heart, and here it fails. Therefore no reliance can be placed on the test for diagnostic or prognostic purposes. It may be useful, however, for determining the amount of work that a given patient can do. This test and all the other exercise tests mentioned previously also fail because they cannot control two important factors which greatly affect the results. These are the psychic and nervous influences.

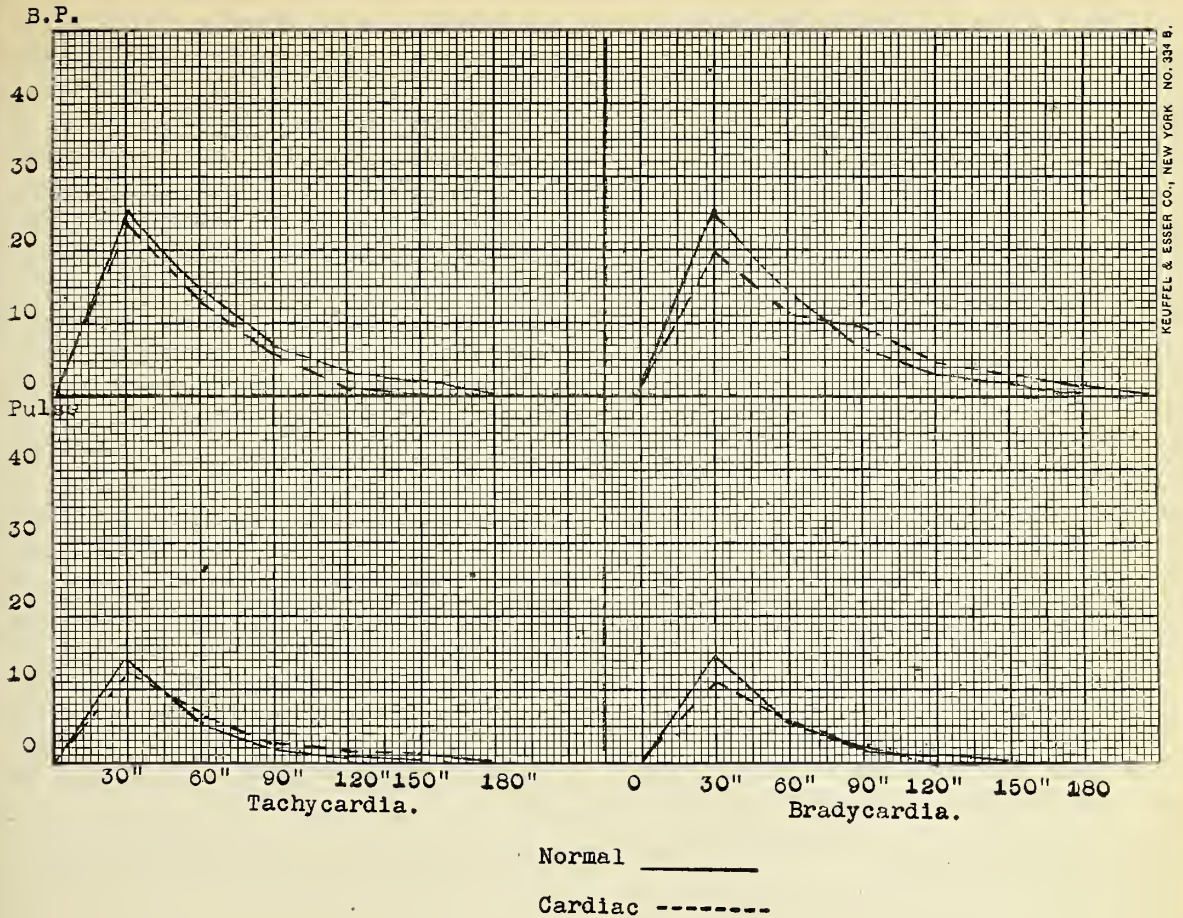
TABLE No. 1

AVERAGE BLOOD PRESSURE INCREASE AFTER EXERCISE							
	No.	30	60	90	120	150	180
	Cases	Sec.	Sec.	Sec.	Sec.	Sec.	Sec.
Normal	276	25.1	14.3	6.4	3.3	2.08	.26
Mitral Regurgitation	96	28.0	16.8	8.4	4.4	2.5	1.5
Mitral Stenosis.....	37	29.0	16.3	9.0	6.0	3.0	.0
Double Mitral.....	32	30.0	18.7	11.2	5.0	1.3	.5
Aortic and Mitral...	16	32.3	20.7	14.0	6.0	4.0	3.0
Aortic Regurgitation	15	28.0	17.0	6.0	4.0	1.3	.6
Myocardial Insufficiency	38	27.5	17.5	10.5	5.7	4.4	1.9
Myocardial Insufficiency and Hypertension	25	24.4	16.8	6.8	2.4	1.4	.8
Cardiac Hypertrophy	30	27.7	17.7	8.3	3.7	1.7	.7
Tachycardia	12	24.0	13.0	6.0	1.0	.0	.0
Bradycardia	6	20.0	11.6	10.0	5.0	3.3	1.6
Hyperthyroidism ...	14	26.4	12.8	7.9	3.9	2.1	.7
Cardiac Neuroses...	13	22.0	13.0	6.1	0.0	0.0	.0
Pulmonary Tuberculosis and Chest Conditions	30	27.0	14.6	7.0	3.0	3.0	.0

TABLE No. 2

AVERAGE PULSE RATE INCREASE AFTER EXERCISE							
	No.	30	60	90	120	150	180
	Cases	Sec.	Sec.	Sec.	Sec.	Sec.	Sec.
Normal	276	14.2	5.38	1.80	0.66	0.24	0.12
Mitral Regurgitation.	96	14.4	6.50	2.80	1.10	0.50	...
Mitral Stenosis	37	14.8	7.0	2.4	1.4	0.0	...
Double Mitral	32	18.6	5.0	2.4	1.0	0.0	...
Aortic and Mitral..	16	14.0	9.0	5.0	2.8	0.4	0.4
Aortic Regurgitation	15	16.4	6.0	3.4	0.4	0.0	...
Myocardial Insufficiency	38	17.3	8.1	3.6	1.5	0.3	0.15
Myocardial Insufficiency and Hypertension	25	18.6	6.9	2.6	0.9	0.2	...
Cardiac Hypertrophy	30	15.5	6.8	3.0	1.2	0.4	...
Tachycardia	12	12.6	6.6	2.4	1.8	1.2	0.6
Bradycardia	6	11.0	6.0	2.0	0.0	0.0	...
Hyperthyroidism ...	14	12.4	7.2	3.0	2.1	1.7	1.7
Cardiac Neurosis....	13	16.2	9.0	5.4	0.6	0.6	...
Pulmonary Tuberculosis and Chest Conditions	30	16.6	6.8	2.0	0.3	0.0	...





SUMMARY

1. Numerous tests have been devised to determine the efficiency of the heart. The majority of them are of little value.

2. The vital capacity and exercise tolerance tests are of some aid in the management of cardiac cases.

3. The only functional test which we have at the present time is the patient himself. A thorough study of the history and symptoms of the case, together with a complete physical examination, will give us more information as to the functional capacity of the heart than all the tests combined.

NOTE: Figures 1 to 7. Curves showing the effect of exercise on blood pressure and pulse rate in various conditions. Exercise consisted in hopping on toes for one minute. Readings taken at intervals of 30 seconds.

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TUBERCULOSIS OF THE EPIDIDYMIS*

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The writing of this paper and a review of the literature on this subject was stimulated by the unusual opportunity which I have had of studying a number of cases of tuberculosis of the epididymis, as attending surgeon at the United States Veterans Hospital No. 68, Minneapolis, Minnesota.

A large number of terms are used to distinguish this disease, such as tuberculosis of the epididymis, tuberculosis of the testicle, tuberculosis of the genital tract, and tuberculosis of the seminal tract, etc. The more recent authors seem to agree upon a generalized infection, instead of a purely local one, and are more disposed to use the broader terms, such as tuberculosis of the seminal tract. Like this variety of names, one finds the same laxity offered in the methods of treatment.

Tuberculosis of the genital tract is invariably secondary to tuberculosis elsewhere, most commonly in the lungs or in the lymph glands. Kocher's¹ statistics showed in 451 cases of urino-genital tuberculosis that came to autopsy that over 80 per cent had pulmonary tuberculosis. Kuster states that by the more advanced methods of examination urino-genital tuberculosis would always be found to be accompanied by lesions elsewhere. Walker believes that tuberculosis of the epididymis is seldom primary, even in the lesions of the genito-urinary tract.

The path of infection of the disease is still in dispute, but authorities seem to be divided mainly into two groups, those who contend that the original infection is in the testes or the epididymis, and that the infection ascends along the vas to the prostate, and those who believe the original infection starts in the prostate or the seminal vesicles and descends toward the testicle. Among the first group are found Reclus, Senn, and others, particularly the writers of practically all of our latest texts and systems. To the second group belong Guyon, who

was probably the first; McFarland Walker, and Hugh Young, who are undoubtedly the strongest adherents. Numerous investigators report series of cases, in which the primary infection seems to be definitely shown to be in the seminal vesicles and others in the epididymis. Salleron, for instance, reports fifty-one cases of tuberculous epididymitis examined by him, in which the seminal vesicles were affected in only one; while Walker reports twenty-two cases examined by himself with special reference to the seminal vesicles, and he found them to be involved in twenty. Guyon¹ reported twenty-six necropsies in which the seminal vesicles were the primary site of the disease. He also reports an extensive clinical experience, in which he found the seminal vesicles or the prostate to be involved in the tuberculous process. Ernest Mark² states that as a primary manifestation of urino-genital tuberculosis, involvement of the body of the testicle must be considered extremely rare. Kidd,³ on the other hand, states that he has seen tuberculosis confined to the testicle alone, and the same can be said of infections with the colon bacillus. Johnson⁴ states that he believes infection occurs by both paths, but that the epididymis is first infected by a tuberculous embolus, in the majority of cases. When the lesion is primary in the epididymis, it is probably hematogenous in origin.

McFarland Walker, whom I have freely quoted, has done much to establish the theory of descending infection. He describes the pathology in a typical case, as consisting of an enlarged mass at the prostatic end of the vas, and another at the testicular end; while the portion between is nearly normal. Microscopic sections through the vesicular mass show a surrounding shell of lymphatic involvement, while the vas itself shows very little, if any, disease. The mid-portion also shows a normal vas with occasionally involved lymphatics. As the epididymis is approached, the lymphatic involvement gradually grows less and the mucosa becomes the site of the disease. The testicle does not show involvement.

Experimentally Walker inoculated the urethra in guinea-pigs with pyogenic organisms, and at the end of twelve hours obtained pure cultures from the seminal vesicles, epididymis, and from the lymphatics about the vas, while the lumen of the vas and the blood stream showed negative cultures. Although he had failed to produce similar results

*Presented before the Minneapolis Surgical Society, March 8, 1923.

with the tubercle bacilli, Blandini had recovered them from the testicle, in similar experiments, at the end of thirty hours. He believes that the tubercle bacillus, like the pyogenic organisms and the gonococcus, cause a descending infection from the seminal vesicles to the epididymis through the surrounding lymphatics. A secondary ascending wave of infection may occur through the discharge of infected secretions. By previously traumatizing the testicle and inoculating the urethra with tubercle bacilli, in rabbits, the lesions resembled in every way those found in the human. Walker further explains that as the infection spreads along the lymphatics, it encounters more suitable soil in which to flourish in the epididymis, which becomes swollen and gives rise to the first clinical manifestations of the disease.

Diagnosis in the average case with the classical symptoms is not especially difficult. Special points of diagnosis may be briefly stated to be: involvement of the epididymis instead of the testes, as in syphilis, painless onset, chronic course, suppuration, and sinus formation; the sinus of tuberculosis being posterior, while that of syphilis is anterior, and frequent presence of tuberculosis elsewhere in the body. On palpation the epididymis is thickened and can be felt as a crest on the orchus. It is usually nodular and not very tender. The vas may be nodular and thickened for a distance along the canal. In acute cases a conglomerate mass that is painful may resemble gonorrhoeal epididymitis so closely that prolonged observation, the finding of gonococci, aspiration or even incision may be necessary to make a positive diagnosis.

Earliest symptoms usually relate to the lower pole and later to the upper pole. Caseation is also to be found first in the lower pole. The other epididymis becomes involved in a large number of cases. At the Thirtieth Congress of the German Surgical Association, Burns⁵ reported seventy-eight cases treated by unilateral castration, in whom the other side became involved in 34 per cent in three months, 40 per cent in four months, and 60 per cent in the later cases. Buguljuboff⁶ has reported 166 cases of tuberculosis of the epididymis, in whom 137 showed involvement of the other side in the average time of fourteen months. These findings seem to check with our own series, comprised of fifteen cases, in which 66 per cent (ten) showed involvement of both sides.

The treatment recommended for this disease varies from the most conservative to the extremely radical. F. Calot⁷ states: "This form of tuberculosis should be treated by conservative methods. For eighteen years I have not performed castration; I exclusively make use of injections, and amongst 200 cases of children and adults, treated by this method, I have not had a single failure." Els,⁸ on the other hand, advises early operation, removing the epididymis, but conserving the testicle when possible. If the testicle must be sacrificed, he recommends the reimplantation of a healthy piece of it into the scrotum for psychic and secretory effect. Schneider⁹ recommends operation only after conservative treatment has failed. The operation should not be too radical, but conserve the testicle whenever possible. He urges post-operative treatment in all cases. He believes both the urine and the semen are infectious and he warns his patients accordingly. Young,¹⁰ who advocates the radical operation in cases of tuberculosis involving the seminal vesicle and epididymis, has written a most complete article. He recommends the removal of both seminal vesicles and ampullæ with resection of both lateral lobes of the prostate through a perineal incision, and removal of the vas and diseased epididymis through an inguinal incision; by back and forth traction the deep portion of the vas is freed so that when possible all tissue is removed in one segment. He reports fifteen cases treated by radical operation with only one death at the end of one year. At the United States Veterans Hospital No. 68 (Asbury), we have chosen to treat these cases conservatively. They have all been studied by Dr. Josewich, attending specialist in tuberculosis, and have been treated medically for months before surgical treatment was advised. Operation was recommended in order to relieve the patient of one of his tuberculous foci. The epididymis and vas were removed and the testes preserved or resected when the disease had not advanced sufficiently to demand its removal. The proximal end of the vas was injected with pure phenol and in the later cases the wound was closed without drainage, even when a tuberculous abscess ruptured or was inadvertently opened during the dissection. Sinus formation is encouraged by drainage and most of these wounds closed primarily, healed like incisions for hernia. Two cases with involvement of the seminal vesicles presenting indurations and swelling to the size of a small orange, on rectal examina-

QUESTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PRE-OPERATIVE TUBERCULOSIS ELSEWHERE	TBC PULMONARY T.B. TONSIL	TBC PULMONARY MEDIASTINUM LEFT-KNEE METATARSAL PHALANGIAL	TBC PULMONARY	TBC PULMONARY	TBC PULMONARY	0	TBC PULMONARY AND PERITONEAL	TBC PULMONARY AND KIDNEY	0	0	TBC PULMONARY	0	0	TBC LEFT HIP	0
POST-OPERATIVE TUBERCULOSIS ELSEWHERE	0	0	0	KIDNEY BILATERAL T.B. BLADDER	0	0	0	0	0	0	0	0	0	0	0
DURATION OF LUMP IN TESTICLE	20-MO	5-MO	8-DA	2703-MO	5-MO	?	6-MO	5-MO	10-MO	RIGHT SIDE 6-MO LEFT SIDE 17-MO	24-MO	24-MO	7-MO	4-MO	55-MO
PAIN	+	+	0	+	+	0	+	+	+	+	+	+	+	+	+
ORIGIN IN LOWER OR UPPER PART	LOWER	UPPER	LOWER	LOWER	LOWER	?	LOWER	LOWER	LOWER	UPPER	LOWER	LOWER	LOWER	LOWER	LOWER
UNILATERAL OR BILATERAL	BILATERAL 2	UNDECEDED 1	1	2	2	2	2	1	1	2	2	2	2	1	BILATERAL 2
EPIDIDYMECTOMY	1	1	1	2	1	1 AND ORCHIDECTOMY	1	1 AND ORCHIDECTOMY	1	2	1 AND ORCHIDECTOMY	2	1 AND ORCHIDECTOMY	1 AND ORCHIDECTOMY	1
URINATION	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	FREQUENT	FREQUENT	NORMAL	FREQUENT	FREQUENT	NORMAL	NORMAL	NORMAL	NORMAL
WEIGHT GAINED OR LOST IN POUNDS	+ 14	+	0	- 10	+ 11	- 30	+ 5	- 13	- 15	0	- 20	+ 15	0	+ 10	0
GENERAL CONDITION SINCE OPERATION	IMPROVED	IMPROVED	SAME	SAME	SAME	SAME	IMPROVED	IMPROVED	IMPROVED	IMPROVED	SAME	IMPROVED	SAME	IMPROVED	SAME
HOW LONG SINCE OPERATION	1YR-8MO	6-MO	4YR-2MO	1YR-2MO	6-MO	3YR-2MO	7-MO	7-MO	9-MO	9-MO	1YR	6MO	1-WK	2YR-3MO	1-DA
TUBERCULOSIS OF KIDNEY	0	0	0	+	0	0	0	+	0	0	0	0	0	0	0
OPERATIONS ON KIDNEY	0	0	0	BI- LATERAL 0	0	0	0	NEPHRECTOMY 6-7-1922	0	0	0	0	0	0	0
BLOODY URINE SINCE OPERATION	+	0	0	+	0	0	0	+	0	0	0	0	0	0	0

Fig. 1. Chart showing a summary of the questions sent to the fifteen cases and the answers obtained.

tion, improved at once after epididymectomy and the pelvic mass decreased one half in size within a few weeks. The Young operation was considered in these cases, but as they were bad surgical risks, a conservative operation was performed. We have also been reluctant to adopt this procedure until its success has been more definitely established. All

operations performed by the author have been under local anesthesia.

Late post-operative care of all these patients has been supervised by Dr. Josewich. They have had general constructive treatment, including rest, heliotherapy, tuberculin, etc., and some have been sent south to government sanatoriums. Home treatment

is supervised and the patients are instructed to report at regular intervals for re-examination. In this respect the treatment is superior to that obtained by most of our private patients.

The surgical treatment of these cases has been under the direct supervision of Dr. A. T. Mann, our chief of the surgical service, and to him I am greatly indebted for the privilege of following these cases and of operating on most of them. I am also indebted to Dr. H. M. Bracken, our past commanding officer, and Dr. H. D. Luse, our present commanding officer, for their aid in securing data and for permission to make these reports. Dr. Waldschmidt, resident at Hospital No. 68, sent a questionnaire to each of our patients, and from these questions and answers compiled the following charts. From these charts, and our experience with these cases, we have attempted to draw a few conclusions.

CONCLUSIONS

1. In our series of fifteen cases of tuberculosis of the epididymis, ten, or 66 per cent, showed extra-genital tuberculosis before the operation.
2. The average duration of symptoms was nine and one-half months before operation.
3. Pain, which is ordinarily considered negligible, was present in thirteen of our cases.
4. In twelve cases, the first symptoms arose in the lower pole of the epididymis.
5. Ten cases (66 per cent) were bilateral.
6. In five cases, one testicle was so badly involved that it had to be removed.
7. Eight cases report their general health to be improved, while seven report their general condition unchanged.
8. One case had tuberculosis of one kidney, which was removed before the operation on the testicle. A second case developed tuberculosis of both kidneys post-operatively.
9. Bloody urine was observed in three cases, two of which had renal tuberculosis.
10. Because tuberculosis of the epididymis is pathologically and clinically a secondary process, we have been conservative in our surgical treatment.
11. Treatment should be general, as well as local, and every available accepted treatment should be employed when indicated.

12. Local anesthesia was employed in all of the author's cases and seems particularly indicated in tuberculous patients.

13. Drainage promotes sinus formation and primary closure should be employed even in the presence of a ruptured tuberculous abscess.

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DISCUSSION

DR. A. T. MANN, Minneapolis: That was a very good paper Dr. Maxeiner has just read. There are some things, of course, which I do not expect to go through, but there are also some things of special interest. One is that practically all patients have tuberculosis in some other place, and, as a rule, primary tuberculosis here is very rare. Then as to the ascending or descending infection. That question has been threshed out for a great many years and quite convincing statistics have been gathered for one side and for the other. The probability is that both are correct, sometimes it is ascending and sometimes it is descending. That is, infection of the seminal vesicles, with or without the prostate, descending from the vesicles to the epididymis. The infection is very apt to spread from the seminal vesicles down toward the testicles, through the lymphatics, along the cord and along the vas.

While all the lymphatics I know about in the body run the other way—they run from the fingers up toward the shoulders, from the genitals up toward the groin, and so on—we do have examples of the change of the current in the lymphatics and infection in the opposite direction in a great many cases. Both sides are more apt to be involved than just one side, and that is, of course, a reason for doing very early work on a case which one sees early and with the involvement of only one side as far as we know, because if left alone practically all are involved on both sides later.

Then comes the question of saving the testicle. It has been very satisfactory to see these cases in which the blood supply is saved, the epididymis taken and part of the testicle taken, to see the ruddy red testicle (that is the color of it when you operate it) and have it largely saved with primary healing. There are some organs whose internal secretions we know very little about, but which are quite valuable. We know this to be true with the ovary

and the thyroid and some of the others. I presume it is also distinctly true with the testicle.

Where the testicle is to be put back as a graft, a part of it. I think is a different matter; that is a cosmetic thing. We know that when organs are transplanted, organs of a highly complicated structure, their end result is connective tissue. While there is great satisfaction in saving a part of the testicle which is to go back as a graft, we can only expect its end result to be a wad of scarred tissue. Where the blood supply is preserved, as is very needful and can be done in a good many cases, it is a very different matter, because it gives us a gland which supplies some material which is very much needed. Young's operation is a very radical one and I should hesitate to do that on most cases.

There is another thing—we must get our cases early and do conservative work. I think in this there has been a little too much tendency to wait and to put a patient down for general treatment. If there is tuberculosis in the epididymis the channels are destroyed and no channel for the semen is left, and so there is to my mind no reason for hesitating to remove the epididymis when it is diseased by tuberculosis. I think an early operation better, which removes the epididymis and as much of the vas as needs to be taken. Most of the cases have a history of distinct improvement in the vesicles if the epididymis and the vas have been taken care of. We should get these cases early, and remember that these cases are T.B. elsewhere, and that they should be given T.B. treatment after the operation, not simply operated and sent away. They need care, and with that care they have a good chance of getting well. The importance of primary healing, I think, is really a great step. There have been some of these cases with a good deal of soiling of the tissues from a discharge that looks like pus. We know we got primary healing in old pus tubes and apparently you can get the same thing here in the tuberculous field.

There is one thing more. When the testicle looks normal to the eye, as in some of these we have taken out, they show the tubercles in the testicle near the epididymis. Those cases, of course, have a chance to get well, too, if the main focus is gone. If they look good to the eye it seems to me that it is best to leave them in until something else shows up, because the channel up to the seminal vesicles is broken when the vas is taken and the epididymis gone. Any recurrence there would be a recrudescence of the orchitis and can be taken care of comparatively early if the case is kept under observation.

DR. R. E. FARR, Minneapolis: You go over the literature and you see a great diversity of opinion in regard to what we should do in these cases. That is illustrated by the difference in the advice of Young, for instance, and the advice of Dr. Maxeiner and Dr. Mann here tonight.

When we have cases of this kind, how are we to treat them? My impression is that perhaps at present the radical operation will be confined to those cases of double epididymitis where there is a marked suspicion of trouble in the seminal vesicles. There I believe if one is going to operate no operation could be too radical. The next question that is of great importance is, how frequently is the testicle involved with the epididymitis? I happened recently to

look the literature up especially carefully and my impression was that if we have an epididymitis of tuberculous origin, we are likely to have a tuberculous testicle on that side. In fact, I know of the statistics of some Englishman who showed forty-eight out of sixty-eight, I think.

Now, it has been advocated by some to divide the tunica albuginea and examine the testicle in these cases. I just bring up this point; I don't advocate it, but it is a question if that is not a good thing to do. It surely does no harm to divide the testicle. We have done that a number of times.

I have nothing more to say with regard to the actual treatment excepting to emphasize as much as possible the point that the doctor made in closing without drainage. Some other points were also brought up in the discussion—especially Dr. Mann's point with regard to transplanting—and I trust that his remarks will never reach Mr. McCormick, because it would be very depressing.

That leads me to another point and that is the question of cosmetics in these cases. I want here to mention a little scheme that we have used a few times—I think five, one double and three single—in which I transplanted a foreign body in the scrotum for cosmetic purposes. In all cases the foreign body put in was glass. One of these was a tuberculous orchidectomy case, and a man here in town, a friend of mine at the Club, has a hundred dollar check which he says he is ready to turn over to me any time I can prove it to him that that man is carrying a glass marble.

I remember the case of a man with atrophied testicles who wanted to get married. He came down to the St. Barnabas Hospital. This man was bothered very much about his condition. He did not even want to go bathing because he did not want the boys to notice wherein he differed from other individuals. I think it was Dr. Maxeiner I sent to get the marbles but he could not find any of the right size. I went down to the laboratory in St. Barnabas and I saw some oblong glass knobs on the laboratory shelves. Dr. Maxeiner filed the projecting parts off of them and that is what the man is carrying around now. They simulate very closely the appearance of the normal gland. Furthermore, it is not necessary for his friends to remember his name. They simply say, "There goes his nob's."

DR. FREDK. OLSON, Minneapolis: I think Dr. Maxeiner is to be congratulated on this unusual series of operative T.B. epididymi covering such a short period of time. It was my good fortune at one time to review some five hundred case histories of T.B. kidneys. In this series two hundred had been classified as regards nodules in the genitalia. Over 60 per cent of the males with T.B. kidneys had demonstrable foci in the epididymis, testicles, vas, prostate or vesicles. The fact that stood out on the group was the diagnostic importance of this finding. For the sake of the house officers present I would like to emphasize these pathognomic nodules which are so easily found. They will often put the examiner on the right track. Furthermore, a thoroughgoing x-ray examination of the urinary tract in a suspected T.B. case will reveal a large amount of information. It should be a routine procedure as 20 per cent of the cases will show shadows in the radiograph, many of which are diagnostic.

TUBERCULOSIS IN SCHOOL CHILDREN: ITS DIAGNOSIS, CLASSIFICATION AND TREATMENT*

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The diagnosis of tuberculosis in children is attended by numerous difficulties. There are no short-cut methods but the physician is compelled to develop a chain of evidence consisting of many links if he is to diagnose this disease with a reasonable degree of accuracy. To detect tuberculous infection is easy in most cases; to detect a tuberculous lesion may not be difficult; but to differentiate between clinical and non-clinical lesions may tax severely the most resourceful physician.

The tubercle bacillus may gain entrance to the body through any of the natural orifices or through abrasions in the skin. The most common portals of entry are said to be the mouth and nose.

The primary lesion or focus develops where the bacilli first proliferate and invade the tissues. This lesion may appear in the skin, tonsils, lungs, intestine or in other parts of the child's body. From the primary lesion, the bacilli usually are carried by way of the lymphatics to the nearest group of lymph nodes. The bacilli are filtered out and retained by the nodes where they proliferate and invade the tissues of the nodes. The disease in the lymph nodes constitutes the secondary lesions or foci. Other bacilli may gain entrance to the blood stream from the region of the primary focus and later find lodgment in bones and other organs, where a secondary focus develops.

Many school children with diagnoses of tuberculosis are suffering from secondary lesions such as those of the bronchial nodes, cervical nodes, and bones. In the earlier years of school life active extensive pulmonary lesions are not common. As one passes to the later years of school life, particularly the high school ages, pulmonary tuberculosis of the adult type is not uncommon. Therefore, in discussing tuberculosis in school children, one must

consider these various forms of the disease including pulmonary tuberculosis.

In examining school children for tuberculosis, we encounter five main groups as follows: (1) children with no evidence of tuberculosis; (2) children with tuberculous infection without tuberculous disease; (3) cases of masked juvenile tuberculosis; (4) children with definite tuberculosis of the lymph nodes, particularly the bronchial and cervical nodes; (5) children with definite pulmonary tuberculosis.

Children of the *first group* may present very difficult problems, as the conscientious physician insists upon exhausting every possibility of detecting tuberculosis before he is willing to commit himself to the statement that tuberculosis does not exist in the body of a child. He knows that no test or phase of the examination is infallible, yet, it is his duty to the child, the family, and the community to render a negative diagnosis, when, after careful examination and observation, it is his honest opinion that tuberculosis does not exist.

In children of the *second group*, a positive tuberculin reaction usually is accepted as definite proof of tuberculous infection, but it gives us no information as to the duration, location, or extent of an infection or focus of tuberculosis. Children of this group have precisely the same findings as those of group one except that they show a positive reaction to tuberculin.

The *third group* recently was called to our attention by Cooke and Hempelmann. Children of this group have, in addition to a positive tuberculin reaction, such symptoms as loss of weight, frequent colds, occasional elevation of temperature and cough which cannot be accounted for on other grounds. One may be unable to locate a tuberculous lesion, but it is believed that following the infection from the tubercle bacillus, somewhere in the child's body there may exist for some time a pathologically active process which is not capable of producing marked symptoms, or being located by examination. Dunham believes "potentially tuberculous" should be a valid diagnosis during childhood. I am of the opinion that the term "undetermined tuberculosis" is the best term for our out-patient service to use until such cases can be observed in the school for a considerable period of time.

*Read before the Consulting Medical Staff of the Lymanhurst School for Tuberculous Children, March 27, 1923.

The *fourth group* of children consists of those with demonstrable tuberculous lesions of the bones and lymph nodes, particularly the bronchial and cervical nodes. Tuberculosis of the bronchial lymph nodes always has been difficult of diagnosis. Dr. John B. Hawes, 2nd, recently has given us much help by the presentation of the following five diagnostic points which he has used for a long time in the diagnosis of *bronchial lymph node tuberculosis*:

"1. A positive skin tuberculin test, unless the child has recently recovered from measles or any of the other acute infections which might lead to a negative test, or unless the child has advanced tuberculosis.

"2. A definite history of exposure from either human or bovine sources of tuberculosis.

"3. Constitutional signs and symptoms, particularly loss of weight or failure to gain weight, along with 'ease of tire' or undue fatigue, fever or rapid pulse.

"4. The presence of enlarged bronchial nodes as shown by x-ray or by clinical examination of the chest.

"5. The absence of other evident sources of infection or toxemia, such as (a) infected tonsils or adenoids, (b) carious teeth, (c) intestinal disturbances and particularly a chronic appendicitis, and (d) other possible sources of infection, such as middle ear, lymph nodes in the neck, bronchopneumonia, measles, whooping cough, etc."

Dr. Hawes calls attention to the fact that one must insist upon a positive tuberculin test and, in the great majority of cases, enlarged bronchial nodes revealed by the x-ray before diagnosing tuberculosis. He regards the other three points as important, but not essential to the diagnosis.

The experiences of the Lymanhurst Consulting Staff in the examinations of several hundred children have proved that a child may have no physical signs of pathology in the chest and yet have very definitely enlarged bronchial nodes revealed by the x-ray. To be sure, we are thoroughly cognizant of the fact that bronchial node enlargement has other etiological factors. However, enlarged bronchial nodes, particularly if calcification is present, together with a confirmed positive skin reaction to tuberculin, should be reasonably conclusive evidence of tuberculosis of the bronchial lymph nodes.

We have seen also, in many cases, mouth, throat, and ear infections produce symptoms which previously led to the diagnosis of tuberculosis. At no time were we able to demonstrate a tuberculous lesion and on removing these foci all symptoms disappeared.

We must not forget that there is no pathognomonic symptom in tuberculosis, but that the diagnosis of this disease must follow a most thorough examination based on the above diagnostic points and must represent the physician's very best judgment after the most careful deliberation. One does not thoroughly appreciate one's responsibility in rendering a diagnosis of tuberculosis until the stigmata thereby heaped upon the recipient have been considered most carefully. On the other hand, one cannot estimate the responsibility assumed by passing over a case carelessly and rendering a negative diagnosis. This may lead the patient to the life of an invalid and cause the patient to expose innocently large numbers of other persons. I know of no other place where the golden rule should be more rigidly applied.

Tuberculosis of the Cervical Lymph Nodes.—Enlarged cervical lymph nodes are seen frequently in children, and inasmuch as tuberculosis is a common cause of enlargement of these nodes, one must consider this disease in differential diagnosis. Committees of the National Tuberculosis Association have set forth very helpful diagnostic standards for tuberculosis of the cervical lymph nodes. The *first* of these is *enlargement of the cervical nodes*. The nodes must be large enough to be seen or felt easily. *Second*, a history of *exposure* to human or bovine sources in the presence of enlarged nodes is of some significance, although it in no way establishes the diagnosis. On the other hand one should not be influenced by a negative history of exposure. *Third*, there are *other causes of enlarged cervical nodes*, such as Hodgkin's disease, acute and chronic infected tonsils, carious teeth, pharyngitis, pediculosis, otitis media, syphilis, etc. Enlargement of nodes posterior to the sternomastoid muscle usually is due to causes other than tuberculosis. *Fourth*, the *presence of constitutional signs and symptoms*, such as those given under bronchial node tuberculosis, when there is enlargement of the cervical nodes, should make one suspicious of tuberculosis. *Fifth*, the *duration of the enlargement of the nodes* is important. It is stated that any node

which has been enlarged over a period of three months or more, with no other explainable cause should be regarded as a tuberculous node. *Sixth*, the relation of diseased tonsils and carious teeth to enlarged cervical nodes must be considered seriously. Inasmuch as these diseased organs are so frequently the cause of enlarged nodes, they should be removed before one diagnoses tuberculosis. If the removal of all such foci of infection has no effect upon the enlarged nodes, tuberculosis should be suspected. *Seventh*, a biopsy should be performed in all cases in whom the diagnosis is uncertain. Usually, it is not difficult to remove and study microscopically one of the smaller nodes. Inasmuch as the primary focus may be in the tonsils or adenoids, it is always well to study these organs microscopically for tuberculosis when they are removed. If tuberculosis is present in them, it is reasonably safe to conclude that the enlargement of the cervical nodes is due to this disease. *Eighth*, confirmatory evidence, such as a positive tuberculin reaction or the location of a definite tuberculous lesion elsewhere in the body should be sought.

Pulmonary Tuberculosis.—The fifth group consists, for the most part, of children above the age of ten or eleven years. However, pulmonary tuberculosis may exist at any age. Formerly, it was believed that each case of the adult type of tuberculosis evolved from a primary infection which the individual acquired in childhood. In more recent years, however, sufficient evidence has accrued to convince tuberculosis workers that the adult type of lesion may be due to reinfection. In fact, many workers now believe that at least 50 per cent of such lesions are due to reinfection.

One cannot place too much emphasis upon the past history and present symptoms such as prolonged exposure, idiopathic pleurisy with effusion, hemoptysis, persistent cough, expectoration, pain in the chest, fever, rapid pulse, loss of weight, impairment of strength, dyspnea on slight exertion, night sweats, amenorrhea and anorexia. None of the symptoms mentioned are diagnostic, but any one of them should cause us to consider tuberculosis.

The diagnosis of pulmonary tuberculosis has been facilitated greatly by Dr. Lawrason Brown's five diagnostic points arranged in the order of their importance as follows:

1. *Tubercle bacilli.*
2. *Moderately coarse râles* above the second rib and third dorsal spine.
3. *A parenchymatous roentgen ray lesion* above the second rib and third dorsal spine.
4. *Hemoptysis.*
5. *Idiopathic pleurisy with effusion.*

If none of these diagnostic points are present, Brown believes one is justified in rendering a *negative diagnosis*. If only hemoptysis or idiopathic pleurisy with effusion is present, the patient should be designated a *tuberculous suspect*. There are patients in whom the x-ray reveals parenchymatous lesions above the second rib and third dorsal spine, but diligent searching brings us no other evidence of pulmonary tuberculosis. Brown gives such cases a diagnosis of *demonstrable non-clinical tuberculosis*. Patients who have parenchymatous lesions revealed by x-ray or moderately coarse râles or tubercle bacilli in the sputum or hemoptysis and idiopathic pleurisy with effusion are diagnosed *demonstrable clinical tuberculosis*, active or inactive, depending upon the symptoms.

In speaking of the activity of a tuberculous lesion, we refer usually to clinical activity. However, we must bear in mind that pathological activity of a tuberculous lesion exists before and long after there are any manifestations of clinical activity.

Clinical activity of a tuberculous lesion is determined ordinarily by the presence of a temperature elevation (above 99 degrees for males and 99.6 for females) and an accelerated pulse rate (above 90 for males and 96 for females). These symptoms should persist for approximately one week when other causes have been ruled out. In small children the rectal temperature must be above 100°. Other symptoms which may denote activity of a tuberculous lesion are blood spitting, night sweats, cough, expectoration, chills, lack of endurance, loss of weight and pleurisy. (These symptoms do not necessarily denote clinical activity of the tuberculous lesion, but they lead one to suspect such activity.) The presence of tubercle bacilli in the sputa usually indicates activity of the disease; however, a small percentage of cases with no manifestations of clinical activity have positive sputa.

Stereoscopic x-ray plates made and interpreted by well trained roentgenologists undoubtedly throw

light upon the activity of a tuberculous lesion. Some roentgenologists believe it is possible to detect activity in 75 to 85 per cent of the cases by a careful study of stereoscopic plates.

The tuberculin test and the complement fixation test, as yet, have not proved of much real value in differentiating between active and non-active tuberculosis. Many are looking forward with great anticipation to the outcome of Larson's work on the precipitin test. A number of workers believe the auto-urine test throws considerable light upon the activity of tuberculous lesions.

Frequently, it is impossible to determine whether a tuberculous lesion is active until the patient has been given a period of observation, preferably in bed in a hospital, where the temperature and pulse may be taken and recorded at regular intervals and the patient may be observed carefully over a sufficient period of time.

In recent years, a great deal has been said about peribronchial tuberculosis. This diagnosis is made from the x-ray plate only. However, the physical findings over the area involved may deviate slightly from the normal. Some workers now believe that the x-ray findings in peribronchial tuberculosis simply represent the course which the disease takes in traveling from a primary infection near the periphery of a lung to the hilus. In most cases, peribronchial tuberculosis is of no clinical significance. However, a small percentage of these cases produce positive sputa, making them highly important public health subjects.

CLASSIFICATION

School children examined for tuberculosis may be classified as follows:

1. No evidence of tuberculosis.
2. Tuberculous infection present—no tuberculous disease.
3. Suspected tuberculosis, masked juvenile tuberculosis or potential tuberculosis.
4. Demonstrable tuberculosis of the lymph nodes, bones, etc.
5. Pulmonary tuberculosis.
 - a. Demonstrable, non-clinical.
 - b. Demonstrable, clinical.
 1. Minimal—A.
B.
C.

2. Moderately advanced—A.
B.
C.
3. Far advanced—A.
B.
C.

The following paragraphs taken from the American Sanatorium Association's Classification of Pulmonary Tuberculosis* explain clearly the lesions allowable for the minimal, moderately advanced and far advanced stages of pulmonary tuberculosis:

"Under Minimal:

"1. Slight lesion:

"(a) Physical Signs: Possibly slight depression above or below the clavicle, lessened movement of the chest, narrowing of the isthmus of apical resonance or restricted diaphragmatic excursion; slight or no impairment of resonance; slight or no change in quality or intensity of breath sounds, with or without some change in the rhythm (that is, prolonged expiration); vocal resonance possibly slightly increased; râles present, absent or transitory. If sputum contains tubercle bacilli, any of these.

"(b) Roentgen Findings: Roentgenograms to show lessened transmission of light in the form of poorly defined, light mottling or diffuse haziness interpreted as infiltration or conglomeration of tubercles, or more intense shadows of a well-defined, stellate or fibrillar character interpreted as fibrosis, with or without opacities interpreted as calcification.

"2. A Small Part of One or Both Lungs: Total volume of involvement, regardless of distribution, shall not exceed the equivalent of the volume of lung tissue which lies above the second chondrosternal junction and the spine of the fourth or body of the fifth thoracic vertebra on one side.

Under Moderately Advanced and Far Advanced:

"3. Lesion Allowable under Moderately Advanced: One or both lungs may be involved but the total involvement shall not exceed the following limits:

"(a) Slight disseminated infiltration of fibrosis which may extend through not more than the equivalent of the volume of one lung.

"(b) Severe infiltration with or without fibrosis

*American Review of Tuberculosis, 6:111, Sept., 1922.

which may extend through not more than the equivalent of one-third the volume of one lung.

"(c) Any gradation within the above limits.

"(d) Total diameter of cavities, if present, should not exceed 2 cm.

"4. *Physical Signs of Moderately Advanced Lesions* are more variable than those of *minimal* lesions and do not usually determine the exact extent of the involvement.

"5. *Roentgen Findings in Moderately Advanced Lesions*: Roentgenograms to show shadows similar in character to those described under *minimal* (paragraph 1-b) but more extensive or more intense, with or without areas of rarefaction interpreted as cavity formation.

"6. *Definite Evidence of Cavity Formation*: Tubercle bacilli usually present; elastic fibres may be present in sputum. Physical signs may not be definite but a combination of any four of the fol-

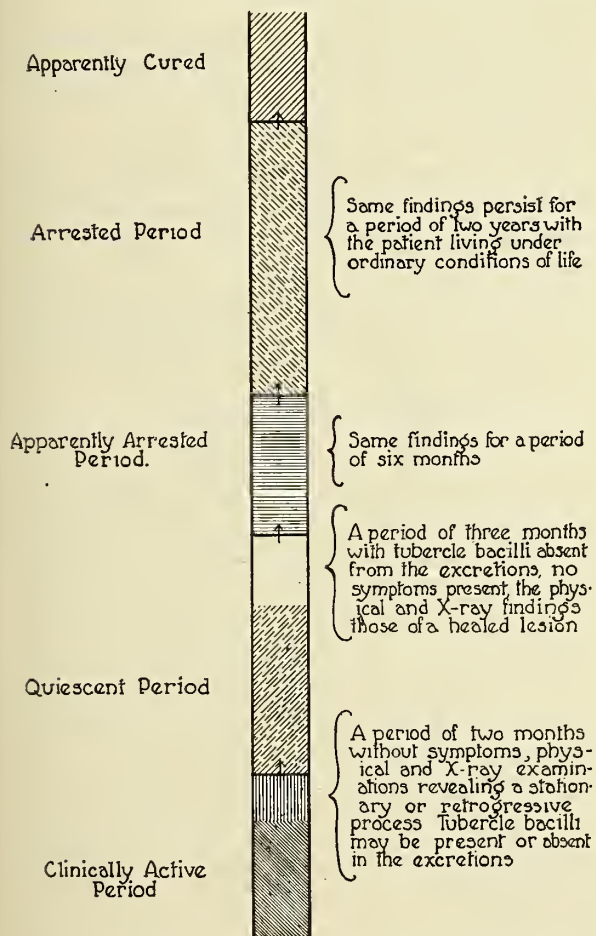


Fig. 1. Diagram to show the various stages through which the patient passes from clinically active disease to the apparently cured stage.

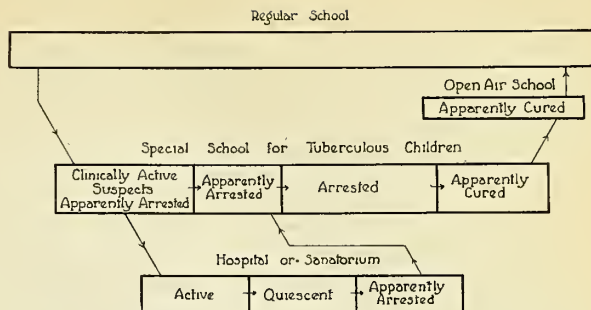


Fig. 2. Diagram showing a practical method of caring for tuberculous children in city schools.

lowing signs is to be taken as indicative of cavity formation: (1) bubbling or consonating râles; (2) cracked-pot note; (3) amphoric breathing; (4) intense whispering pectoriloquy; (5) post-tussive suction. Roentgenograms to show single or multiple areas of rarefaction surrounded by dense borders.

"7. *Serious Complications*: These should be limited to tuberculous complications affecting any organ or tissue to such an extent as to impair seriously local function, as determined by symptoms, and influence unfavorably the prognosis of the case."

A, B and C are used to indicate symptoms only. A indicates "slight or no constitutional symptoms, including particularly gastric or intestinal disturbance or rapid loss of weight; slight or no elevation of temperature or acceleration of pulse at any time during the twenty-four hours. Expectoration usually small in amount or absent. Tubercle bacilli may be present or absent." B indicates moderate symptoms with "no marked impairment of function either local or constitutional." C indicates severe symptoms together with marked dyspnea on exertion, marked weakness, anorexia and tachycardia.

After a case of active tuberculosis has so improved as to be without constitutional symptoms, to have physical and x-ray findings of a stationary or retrogressive lesion, whether bacilli are present or absent in the excreta for a period of at least two months, the patient may be classified as *quiescent*. If improvement continues so that all constitutional symptoms are absent, the physical and x-ray findings are those of a healed lesion and bacilli are absent from the excreta for a period of three months, the patient is placed in the *apparently arrested* class. When the same conditions have

persisted over a period of six months, the disease is said to be *arrested*. If the patient under ordinary conditions of life continues to present the same findings over a period of two years, he may be placed in the *apparently cured* class.

TREATMENT

Children who, upon careful examination, show no evidence of tuberculosis as well as children with tuberculous infection with no manifestations of disease, should be returned to their regular schools with any recommendations as to subsequent examinations and observation which the examining physician may see fit to make.

Children with suspected or undetermined tuberculosis (potential tuberculosis or masked juvenile tuberculosis), with some evidence in favor of tuberculous disease, should be placed in an observation ward such as that operated in connection with the Lymanhurst School for Tuberculous Children in Minneapolis where they are studied intensively over a sufficient period of time.

All children with demonstrable tuberculous lesions of the lymph nodes, bones, etc., should be transferred from their regular school to a special school for tuberculous children such as the Lymanhurst School in Minneapolis. After careful observation in such a school, those found to have clinically active disease are transferred to institutions where such conditions in children are given special attention, such as the Glen Lake Sanatorium at Oak Terrace, Minnesota, or the State Hospital for Crippled Children in St. Paul. These children always should be treated for the general disease with its local manifestations. Therefore, the usual anti-tuberculosis regimen should be instituted at once and continued as long as necessary. In addition, such special therapeutic measures as x-ray, sunlight, surgery and tuberculin may prove of great value when indicated. Such cases should be retained in the hospital until the tuberculous process is apparently arrested, when they should be returned to the school for tuberculous children.

Children with demonstrable tuberculous lesions of the lymph nodes, bones, etc., with no signs of clinical activity should be retained in the special school for tuberculous children. If the case is one causing bone or joint deformity, it is best treated in a school for deformed children, such as the Dowling School in Minneapolis, provided there are

contra-indicating conditions making contact with other crippled children potentially dangerous.

Children in the special schools for the tuberculous who have become apparently cured should be transferred to an open-air school under competent supervision, and, when the condition warrants, back to their regular schools.

Children with demonstrable pulmonary tuberculosis should be sent to the school for tuberculous children. If, under careful observation, the lesions prove to be of the non-clinical type, the children should be transferred to an open-air school under competent supervision. If, on the other hand, the lesions prove to be of the clinical type, and there is any evidence of clinical activity, the children should be transferred at once to a children's ward in a hospital or sanatorium for the tuberculous. They should remain there until the disease is apparently arrested, when they may be readmitted to the school for tuberculous children.

Children with inactive clinical pulmonary tuberculosis admitted to the school for the tuberculous may remain at their school work, but should be kept under very close observation.

When the pulmonary disease is declared apparently cured, the child should be transferred to an open-air school and, at a safe time, back to the regular school.

There are two outstanding points which must be emphasized everlastingly in dealing with tuberculous school children.

1. The welfare of the community.
2. The welfare of the individual.

We know that certain cases not clinically active are capable, under certain conditions, of discharging tubercle bacilli from their bodies. Therefore, there is a possibility of others becoming infected from such cases. This is one point in favor of the special schools for tuberculous children. The second and stronger point is immediately from the standpoint of the individual and more remotely from the standpoint of the community. In such special schools children with tuberculous lesions may learn to save their lives and at the same time develop into safe, useful and happy citizens; whereas, without such schools, not only would the lives of many such children be lost, but many others would be exposed while they were passing through the various stages of the disease to death.

HYPOTHYROIDISM*

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The recent widespread interest in endocrinology has given the medical profession a new incentive to the study of disorders of growth and metabolism. Unfortunately there has been a great deal of extravagant theorizing associated with this study, serving to bemuddle the rather scanty amount of exact knowledge that we possess. Swale Vincent, Cannon and others have called attention to many of the fallacies in reasoning regarding the endocrines, and emphasized the fact that further experimental data are required before even some of the widely accepted views on the subject can be confirmed.

The hypothesis of thyroid function is supported by much sound clinical and experimental evidence; we have accurate methods of laboratory diagnosis in thyroid disorders, and in the treatment of hypothyroidism we have a specific substance at our command. However, not all disorders associated with lowered basal metabolic rate are hypothyroidism, and neither is a condition necessarily due to primary hypothyroidism because it is benefited by thyroid feeding. The true primary hypothyroid states are relatively uncommon, and, probably for that reason, frequently escape diagnosis. It is the purpose of this paper to present a group of proven cases, and to emphasize certain points in their diagnosis and treatment. The cretins and one case of myxedema were observed on the service of Dr. L. G. Rowntree at the University Hospital, and it is through his courtesy that I am permitted to report them. The other myxedema patients were seen in private practice.

According to Plummer the primary hypothyroid states are classified as: (1) that which follows faulty prenatal development or destruction of the thyroid, cretinism; (2) that which follows post-natal destruction of the thyroid, myxedema; and (3) the status in which the thyroid temporarily does not (because of functional disability) respond to the demands of the body. He considers the true criterion of hypothyroidism to be the appearance of edema when the metabolic rate falls lower than minus 18 per cent.

Seven cases belonging to group (1) were observed; all were inmates of the Faribault school for the feeble-minded. Unfortunately no adequate histories could be obtained, although in each case it was known that the abnormalities noted had been present since birth. In only one case (that of sisters) was there any familial history. All of these patients were natives of this state. The physical findings of all are rather stereotyped and therefore the presentation of a typical picture is attempted before the discussion of details in individuals.

The patient Hilda L. was 31 years old, female, height 119.3 cm., weight 37 kg. She remained most of the time in a curled up "fetal" attitude, slept a great deal and appeared to be oblivious to her surroundings. The head was proportionately large, particularly in the antero-posterior diameter; the limbs short in proportion to the trunk length. The bridge of the nose was retracted, the alæ very wide; the lips and ears were thickened, the palpebral fissures narrow. The tongue was greatly enlarged and showed the indentations of the teeth; no thyroid tissue was palpable in the short thick neck. The voice was hoarse and croaking.

The cutaneous changes were particularly striking; the skin was cold, rough and scaly, and there was no perspiration. The hair of the head was very sparse, coarse and stiff, and, while there was practically no hair at all on the body, a bristly growth was noted on the face. The characteristic edema of the disease was everywhere in evidence, giving the body surface a tense inelastic feeling. Supraclavicular fat pads, and pads on the dorsum of the hands and feet were prominent features; the extremities were wide and stubby, presenting the typical "spade" appearance. There were no neurological lesions, but the muscles generally were stiff and indurated, and all movements were slow, clumsy and suggestive of a spastic condition. Her gait was decidedly waddling. The basal metabolic rate of this patient was minus 20 per cent and the mental age 22 months; reaction time to sound could not be determined.

The second case, A. H., female, aged 24, resembled the first in all essential particulars; her metabolic rate was minus 12 per cent and her mental age, which had been 3 years in 1910, was then 4 years. Her reaction time to sound was 0.289 second. The cutaneous changes, mental symptoms

*Read before the Southern Minnesota Medical Association, Mankato, December, 1922.

and edema differed from those of H. L. only in degree, and the same disproportions of growth were noted.

I. A., female, aged 15, was the largest of our group, being 136 cm. tall and weighing 63 kg. Her family history was good; she had walked first at the age of five years; her menstruations had begun recently. She was particularly morose and ugly; her speech was indistinct and her voice hoarse and deep. The skin was very rough, coarse and dry; on the back many bluish subcutaneous nodules were seen. The extremities and face presented the usual edema. Her basal metabolic rate was minus 23 per cent; her mental age 44 months, and reaction time 0.399 second.

Consuelo F., aged 22, was active, smiling and friendly. Nevertheless, she had marked mental retardation, her mental age being 54 months, and she was too stupid to permit of reaction time calculations being made. Her basal metabolic rate was minus 14 per cent. There was a luxuriant growth of fine hair all over her back, and her skin was ichthyotic. The muscles were extremely hard and stiff, feeling almost like wood to the touch. As a consequence her gait was very clumsy and staggering and she had a tendency to fall backward. A chest plate showed a persistent thymus, and x-ray studies showed delay in epiphyseal closures, her bony development being about that of a 16-year-old.

The fifth and sixth patients were sisters. The younger child, F. D., aged 15, was the milder case and lacked the typical appearance of the others. Her mental age, however, was 32 months, the same as that of her sister, and she was particularly dull and apathetic. There was a growth of very fine soft dry hair practically all over her body. The cutaneous findings were very definite; the extremities were cold, bluish, and swollen; a peculiar induration of the right thumb was noted. Her breasts were very well developed, and she was said to have menstruated. Metabolic rate was minus 13 per cent, reaction time .199 second.

The older sister, N. D., aged 25, presented a typical cretinoid facies, but her cutaneous changes and edema were confined chiefly to her lower extremities. In other areas the skin was fairly moist and soft; she also had an extensive growth of hair over the body. "Pot-belly" and macroglossia were present. Her metabolic rate was

minus 22 per cent, her reaction time correspondingly slow, 0.667 second. Both sisters had the usual spastic muscular phenomena with stiff and waddling gait.

These two patients were chiefly remarkable in having palpable thyroid tissue; in both there were large adenomatous masses attached to the isthmus and both lobes of the gland were palpable. There was no palpable thyroid tissue in the other five patients.

By far the most striking member of the group was William A., aged 31; he was the smallest, weighing 26 kg. and being 115 cm. tall. He presented few of the marked cutaneous changes seen in the other six patients and very little edema was demonstrable. His abdomen was prominent, his extremities stubby and he had large supraclavicular fat pads. Growth abnormalities were manifested in his relatively short limbs and large doliocephalic skull. His genitalia were atrophic, and he had no secondary sexual characteristics. His nose constituted fully a third of the width of his face, and its bridge was retracted. While he was 55 months old mentally, his reaction time was 0.525 second, and his speech was unintelligible. His metabolic rate, the highest in the group, was minus 7 per cent.

In summarizing the important points in this group, the diagnostic triad of developmental defects, feeble-mindedness, and myxedema is prominent. Dwarfism was a feature in all but one case; and in all there was evident disproportion between total and sitting height. The skulls of five of the patients were doliocephalic, and, according to an anthropologist, Dr. Jenks of the University faculty, very primitive in type. A dental consultant noted the marked spacing between the teeth, their tendency to decay, and striations on their surface. In no case had the third molars erupted. Delayed reaction time to sound was a constant feature and the results in the Binet and performance tests demonstrated their mental retardation. The speech of all was practically unintelligible.

The third feature, myxedema, was present in all; in attempting to chart the amount of edema (on a basis of one to four) with the basal metabolic rate, it was seen that the two, as might be expected, ran very nearly parallel. However, no definite relationship between the basal rate, mentality and reaction time could be determined. The lower the rate,

the more striking were the changes in the skin; moderate tendencies toward ichthyosis were noted in six cases. The hair of all patients was dry and sparse, and varying degrees of alopecia were present. In three cases, a growth of fine lanugo-like hair was seen on the body. Spasticity and indurations noted in the muscles were considered to be due to myxedematous deposits in their substance.

Diminished heat production was evidenced by a generally subnormal temperature, pulse, and respiration, and by the lowered basal metabolic rates, which ran roughly parallel to the severity of the case. Since these patients could not give the best possible co-operation in this work, it is believed that in some cases the metabolic readings are slightly higher than the correct figure.

The other laboratory findings yielded additional diagnostic data. Urinalyses were negative. All of the patients had negative Wassermanns. Four of the patients had a definite secondary anemia, and four had the lymphocytosis so commonly associated with thyroid disorders; in only one case was this particularly marked. Blood chemistry in all patients gave results within normal limits. Five of the cases had definite hypotension with very low pulse pressure; in the others blood pressure was normal.

The prognosis in this group was considered to be rather poor, but treatment in one case was very gratifying. H. L., the first patient described, was given 6 mg. of thyroxin intravenously; a week later her metabolic rate had risen from minus 20 per cent to plus 4 per cent, and after another 6 mg. dose, by mouth, was exactly normal at the time of her discharge. She had lost five pounds, her skin was much softer and most of her edema had disappeared. Her mental condition had improved markedly; she spoke a few words, knew the head nurse and intern, and played a little with some toys.

The second group of primary hypothyroid states, myxedema, presents a somewhat different symptomatology. Since the destruction of the thyroid takes place after growth is more or less advanced and the mentality developed, the features of developmental defects and feeble-mindedness are either absent or much modified. Mental symptoms, nevertheless, are seldom lacking and the various physical changes due to diminished heat production

and myxedematous deposits are usually conspicuous in well developed cases.

When thyroid destruction takes place before puberty an interesting gradation between cretinism and adult myxedema may result, as in the case of L. P., a well built male of 37. He had been subnormal since childhood and had never reached sexual maturity, his genitalia being totally undeveloped and secondary sexual characteristics entirely absent. He had a typical myxedematous facies, with extensive non-pitting edema of the extremities; his skin was thickened, cold, and very scaly. Macroglossia and fat pads were noted. His mental age was 12.5 years; he was emotionally unstable, cried frequently, and was very childish in speech and actions. His basal metabolic rate was minus 26 per cent.

Five cases of myxedema were seen recently at the Mankato Clinic. Lack of time prevents a detailed discussion of these patients, but their clinical features were sufficiently similar to permit of group description. The characteristic edema of the disease occurred in all, and was particularly marked about the face. The puffy, expressionless facies with scanty eyebrows and hair gave in each an immediate clue to diagnosis. The skin in each instance was dry, scaly and coarse; perspiration was absent or nearly so. As in the cretins, axillary and pubic hair was scanty or entirely missing. Speech was slow and deliberate and pronunciation imperfect. Macroglossia and cervical fat pads were noted in three cases. Mental symptoms were present in all, ranging from loss of memory and attention in the mildest to a low grade dementia in the most severe case. One patient, a male aged 60, had a marked anemia, which, taken in connection with his edema and a slight albuminuria, had led to a previous diagnosis of nephritis. A second patient had an indolent leg ulcer, which showed its first signs of healing after an intravenous dose of 10 mg. thyroxin. Another case, with every classical symptom of the disease, had localized indurations in her muscles, reminiscent of the changes found in the cretins. These were quite painful and tender, did not disappear until her metabolic rate had reached normal and reappeared when she neglected treatment. In only one case in the group was there any palpable thyroid tissue, and in this patient a

large adenoma had been removed six years previously. She developed symptoms of myxedema coincident with the recurrence of her goiter, which proved at operation to be of the colloid type.

The laboratory findings in the myxedema patients were similar to those in the cretins. Three patients had traces of albumin and rare casts; and of these, two had slight hypertension, two had anemia and three a lymphocytosis. Basal metabolic rates varied from minus 17 to minus 39 per cent and the usual relations existed between the metabolic rate, the general severity of the case, and the amount of edema present.

In reviewing this group, it is apparent that there is an abundance of clinical features in hypothyroidism which should render the diagnosis relatively easy. The principal difficulty lies in the identification of early and atypical cases and in these the determination of basal metabolic rate is of great value. Slightly lowered rate, however, is not sufficient evidence for a diagnosis of primary hypothyroidism; and it is generally believed that even with rates of minus 20 per cent the diagnosis is questionable unless there are definite physical findings. To explain many of the debatable cases, Plummer has advanced the hypothesis of secondary hypothyroidism, a theoretical state existing when conditions of the body do not demand the maintenance of the normal supply of thyroxin. This group would include the minor thyroid deficiencies and possibly other conditions associated with lowered metabolism. The diagnosis of true primary hypothyroidism should be reserved for those cases in which lowered metabolic rate is associated with proportionate physical findings.

While the matter of treatment is familiar to all, there are certain points worthy of mention. The establishment of a proper dosage of thyroid extract requires careful clinical observation. Frequently variations in potency and rate of absorption of the drug cause difficulty and lead to unsatisfactory results. Treatment with thyroxin has many advantages. It can be given satisfactorily by mouth or intravenously, and when given by the latter method its effect upon the metabolic rate can be accurately predicted. Observation of the patient and determinations of the basal metabolic rate at intervals are necessary for the best results, no matter which drug is used.

DISCUSSION

DR. L. G. ROWNTREE, Rochester: I greatly appreciate the opportunity of hearing Doctor Snell's excellent paper. In the study of hypothyroidism pictures are of importance. Osler said, "Much misunderstanding exists as to the exact definition of a cretin, illustrated by the fact that at least one-half of the illustrations sent me from different institutions did not belong to this type of idiocy." In his textbook he makes the statement, "The diagnosis is easy after one has once seen a case, or good illustrations." There is a striking family resemblance in many cases of cretins, as can be seen from the accompanying photograph. Family resemblance is also marked in other diseases of the glands of internal secretion such as in exophthalmic goiters and Froelich's syndrome.

The most important physical manifestations are infiltrated skin, scanty, coarse hair, thick lips, fat pads, spade-like hands and the tendency to scaling. The coarse croaking voice is also of importance.

A marked slowing of the mental condition has long been known in hypothyroidism. However, quantitative studies by reaction time determinations, Binet and performance tests, have not been made before so far as I know. Through the kindness of Doctor Haggerty, of the University of Minnesota, these more exact measurements of mentality were made possible. In differential diagnosis, juvenile myxedema can often be distinguished from cretinism. Mongolianism belongs in another category.

Myxedema is familiar as a text-book picture. However, in practice it is often overlooked. Anders says, "Out of twenty-seven cases belonging to my series not less than twenty, or 74 per cent had gone unrecognized by one or more physicians, including physicians of large caliber. The average duration for these twenty-seven cases was five years. Unless the physician is always alert and has a high index of suspicion, myxedema is sure to be overlooked. Recently a patient was seen in the Clinic who was himself a physician and who had seen some of the best men in Chicago. Although he had been a victim of myxedema for years his condition had not been diagnosed by himself or by his former physician.

Slow pulse, increased turgor of the tissues, infiltration of the skin, a tendency to ichthyosis and marked scaling of the skin of the legs should always raise suspicion.

Hypothyroidism of the myxedema and cretin type is not infrequent. Doctor Plummer considers two forms of hypothyroidism, namely, primary and secondary. The secondary type is of unusual interest, but to date little is known of it. In this type edema is frequently absent. Marked pallor of the skin, ichthyosis and a lowered mentality are the common characteristics. In the female there is usually a lack of menstruation. Doctor Plummer has called my attention to a tendency to negativism in some of these cases. Anorexia nervosa frequently exhibits a lowered rate and patients with low rate often improve markedly on thyroid treatment. In suitable cases of hypothyroidism thyroxin accomplishes miraculous transformations.

SURGICAL RELIEF OF DYSMENORRHEA*

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The cases of dysmenorrhea that are due to pathological ante flexion and to retroflexion causing obstruction and stenosis of the canal, and those caused by malposition of the uterus, are the ones to be dealt with in this paper.

The surgical procedure most frequently resorted to for the relief of painful menstruation is dilatation of the cervix and light curettage of the uterus for the purpose of stimulation. This procedure gives a varying percentage of cures and relief in the hands of different surgeons, some reporting as high as 60 per cent of cures and others reporting a much lower percentage. For example, Stacy and

Joseph⁹ report only 28 per cent relieved by this procedure alone, and Crossen² states that in his hands a large proportion of cases are benefited for several years and that the number is very small in which there is no definite improvement from this operation.

Forssner⁴ describes a method of dilating the cervix and tamponing the uterus. His procedure is briefly as follows: dilating the cervix by means of a Hegar bougie and then tamponing. He then removes the tampon and dilates the cervix with a larger bougie followed by a tampon which is left in the cervix for forty-eight hours. The uterine contraction set up by this foreign body, in his opinion, makes for the development of the uterus. Forssner claims for this procedure 46 per cent of cures, 34 per cent greatly improved and only 20 per cent unrelieved.

The next surgical procedure to be considered is dilatation and curettage plus the use of some stem pessary. Crossen recommends the Baldwin glass

*Presented before the monthly scientific meeting of the Swedish Hospital Staff, Minneapolis, Minn., December 7, 1922.

DUDLEY OPERATION

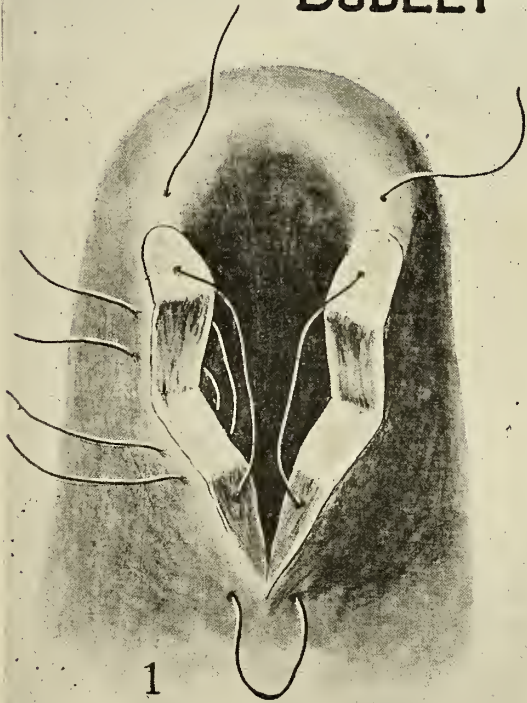


Fig. 1. Dudley operation from Crossen's "Operative Gynecology," 1917, showing posterior division made, wedge shaped piece removed and stitches in place.

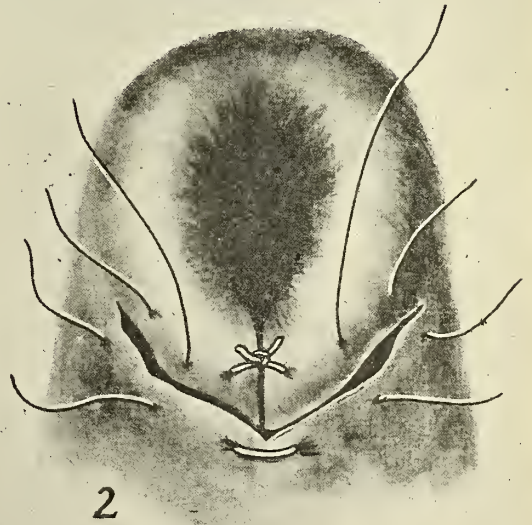


Fig. 2. Dudley operation from Crossen's "Operative Gynecology," 1917, showing non-absorbable stitch tied and absorbable sutures ready for tying.

stem or the Dickinson hollow silver stem, both of which, when properly placed, lie entirely within the cervix. Stacy and Joseph increase their percentage of relief an additional 13 per cent by using the Baldwin stem as an addition to dilatation and curettage.

For the relief of dysmenorrhea caused by ante-flexion and retroflexion, the various surgical procedures are offered where the posterior or anterior segment of the uterus is divided for the purpose of relieving the obstruction and stenosis. These uterine operative procedures are more effective when supplemented by the removal of any other contributing pathological condition which may obtain at the time, for example, inflamed appendices, cysts of the tubes or ovaries, etc. Crossen warns against neglecting to remove contributory pathological conditions.

The first procedure for the relief of obstruction and stenosis was devised by Marion Sims.⁸ This consisted merely of splitting the posterior segment of the uterus. The operation failed, however, in many instances because of the reuniting of the tissues divided and also because of the poor asepsis of that period, but the principle of dividing the cervical segment is the one used in the more recent procedures.

The Dudley operation (Figures 1 and 2), which was devised for the relief of pathological ante-flexion and its resulting obstruction and stenosis, was first published by Dudley in 1890 after having been used in eighteen cases. This procedure is well described by Dudley³ himself in his 1902 edition, after his having done sixty more posterior divisions of the cervix. The technique of this operation is also well described by Crossen and is as follows: The cervix is grasped by a tenaculum, pulled down and the posterior segment split by means of a knife or scissors straight back, dividing the internal os. The two cut surfaces are then held apart and a wedge-shaped piece of tissue removed from both sides as shown in Figure 1. The sutures are then placed as shown in Figures 1 and 2 and, when tied, tend to shorten the posterior segment of the cervix, overcoming the ante-flexion and widening the canal, which overcomes the stenosis at the internal os. Dudley claims for this procedure seventy-five per cent relief.

Crossen adds to the Dudley operation the use of a stem pessary which he leaves within the canal until healing is complete.

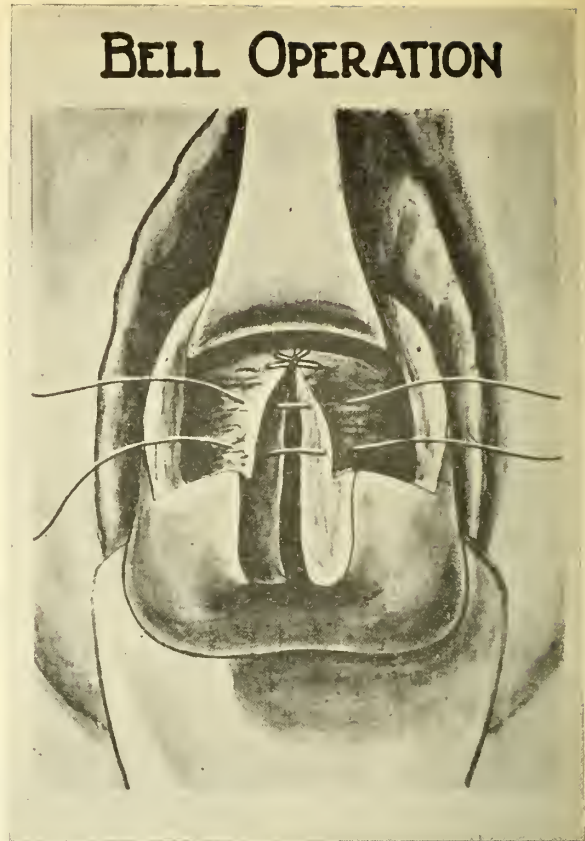


Fig. 3. Bell operation from Eden and Lockyear "New System of Gynecology," 1917, showing incision made and superficial sutures in position.

Graves⁶ recommends some form of uterine suspension to accompany the Dudley operation.

Another very simple operative procedure offered is the anterior hysterotomy described by Bell.¹ A transverse incision is made through the vaginal covering of the posterior segment of the cervix (Fig. 3), which covering is reflected upward toward the bladder. A longitudinal incision is then made in the posterior cervical segment clear up to the internal os. The longitudinal incision is closed merely by superficial sutures, allowing the canal surface of this incision to remain open. The transverse incision is then closed. Bell claims a high percentage of relief and recommends this for either ante-flexion or retroflexion of the uterus.

The operation devised by Pozzi⁷ for the relief of cervical stenosis, which operation is a bilateral division of the cervix with the cupping of the raw areas, gives to Stacy and Joseph an additional 20 per cent of relief. Crossen, however, claims that the relief obtained from this operation, when com-

bined with the curettage and dilatation, is due to the curettage and dilatation and in no part to the Pozzi operation.

One of the more recent operations devised for the relief of dysmenorrhea caused by pathological antelexion, is that of Jacob Frank.⁵ This operation consists of splitting the posterior segment of the cervix to the internal os (Fig. 4) and hollowing out the tissue between the canal and vaginal surfaces of the cervix so that these two surfaces can be approximated readily by a continuous suture. This operation, like that of Dudley, opens up the canal, relieving the obstruction and stenosis. Frank claims this is applicable in cases of retroflexion as well as antelexion.

Following is a report of several Dudley operations performed by me within the last year:

Case 1. Miss W., age 26, housemaid, physically well developed, family history negative, came to me for an examination on February 5, 1921. She complained of extremely painful menstruations, necessitating her spending the day preceding her period, and the first day, in bed, and as she grew older the pain increased. She also complained of backaches and also pain in the lower abdomen, which was especially severe when standing on her feet a great deal. Patient began to menstruate at the age of sixteen, duration four and five days.

Physical examination revealed a small retroverted and immovable uterus. Patient was under my care for one year without relief from medication.

On January 6, 1922, the Dudley operation was performed. First menstruation postoperative early in September was very painful. Menstruations of March, April, May and June were painless. The July menstruation was painful the first day. The August and September menstruations were painless, but considerable pain attended the menstruations of October and November.

Case 2. Miss C., age 20, office assistant, family history negative, came to me for an examination on February 16, 1920, complaining of very painful menstruations, necessitating her spending several days in bed. Began to menstruate at the age of thirteen, duration two or three days.

Physical examination revealed extreme retroversion of uterus with an elongated cervix.

Patient was operated upon on March 6, 1920, the operation consisting of dilatation, curettage, Wylie's suspension, appendectomy, removal of cyst

of right ovary. First menstruation postoperative was extremely painful. The menstruations following for about six months were considerably less painful than before the operation, but patient felt very weak and would stay in bed for about a day at each period. After the first six months her menstrual periods again became very painful and no relief was obtained from medication.

On February 15, 1922, the Dudley operation was performed, since which time the patient has followed her previous employment and is entirely free from any menstrual disturbances.

Case 3. Miss E., age 24, stenographer, family history negative, came to me for an examination on August 27, 1922. Patient began to menstruate at age of sixteen and stated that her menstruations had always been very painful but were more severe during the last two and a half years, and especially so at night. She complained of being very nervous and had severe backaches especially when standing on feet.



Fig. 4. Frank operation from Frank's "Obstructive Dysmenorrhea and Sterility" showing posterior incision made and canal and vaginal surfaces approximated by continuous suture.

Physical examination revealed the uterus ante-flexed and cervix rather elongated.

On April 26, 1922, the Dudley operation was performed and the Wylie suspension. First menstruation postoperative, May 21st, was attended by slight pain the first hour. Practically no pain attended her menstrual periods of June and July.

Patient married and became pregnant. Missed menstruation of August. Patient aborted September 4th. The conditions following the abortion were generally good.

Patient's letter of December 4, 1922, states that her menstruation of November 8th was attended by very slight pain at first, and was less painful than any menstruation since her operation.

Case 4. Miss F., age 25, lives at home, family history negative, came to me for an examination on April 14, 1922. Patient began to menstruate at the age of fourteen, twenty-eight day type and of one week's duration. Menstruations have always been very painful, and patient complained also of frontal occipital headaches, saying she was seldom free from headaches.

Physical examination revealed uterus prolapsed and ante-flexed; dysmenorrhea. The patient was under care from August to November with no relief from medication.

On November 1st, the Dudley operation was performed; Wiley's suspension; appendectomy. The first menstruation postoperative was on November 13th, of four days' duration and absolutely painless. The December menstruation was also absolutely painless.

SUMMARY

No case of dysmenorrhea should be subjected to surgical work until careful, scientific attempts are made to relieve the condition by means of medication, glandular therapy and the general upbuilding of the patient.

The large percentage of cases of dysmenorrhea relieved by the simple procedure of dilatation of

the cervix with stimulating curettage of the uterus, justifies its being the first procedure attempted. It is many times the means of stimulating the uterus of the married woman so that she may become pregnant, pregnancy being the greatest cure of all for painful menstruation.

The relief obtained from the various operations previously described is by means of a division sufficient to overcome the obstruction and stenosis and the maintenance of that division. The principal function of the uterine suspension when added to one of these divisions, is to allow the uterus to receive its blood supply unobstructed and to keep the canal free from stenosis, and the advice of Graves in employing some form of uterine suspension is clinically worth following as my experience has been where a dilatation, curettage and suspension was done no relief was obtained until the Dudley operation was performed, and in cases where a Dudley operation was performed no relief was obtained until a suspension was done.

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AUGUST, 1923

No. 8

EDITORIAL

The Todd Memorial Clinic

No man of the medical faculty of Minnesota was ever more beloved than was the late Frank Chisholm Todd. None brought to the faculty councils a more nicely balanced mind, a keener judgment, a surer sense of educational values, than he did. He was at once a good teacher, an excellent clinician and a capable administrator.

It was in his resourceful brain that the idea of graduate study in Minnesota first took form in the teaching fellowship.

He measured time by the headway one made. It was a trial to him in his last years—it would have been a growing aggravation to him had he lived—to await the slow movement toward University hospital extension and a better developed school. He thought always in terms of betterment.

He died in the war-service of his country. His command of the hospital at Camp Dodge was telling witness to his genius for organization. But the

war was only an incident of patriotic devotion in the story of his untimely ended life.

He died still thinking in terms of betterment for the school he loved. Among his private papers Mrs. Todd found, and entrusted to the interested study of his colleagues, memoranda indicative of his desire to contribute, out of his income or estate, toward the establishment of a permanent clinic in ophthalmology and otolaryngology. Details of the enterprise had taken shape in his mind and were outlined there. They sketched the skeleton upon which his large conception of usefulness to his profession was to be built.

Mrs. Todd proposed to set aside \$20,000 of his modest fortune toward such a memorial to him. Mrs. Edward C. Gale had already promised to add an equal sum to the fulfillment of his devoted purpose. It remained to his friends and colleagues and to the University, which owed him much, and of which he was alike an alumnus and a teacher, to enlarge this fund to suitable proportions to actualize the Todd Memorial Clinic.

"But the years are as waves that wash and wind,

As careless waves that sweep the mind,

And they creep like the grass,"

and slow, slow years they have been in bringing his purpose to the fulfillment it now promises to reach. To the gifts offered by his widow and his friend, Mrs. Gale, the University has found it possible at length to add \$110,000 toward the realization of the thing for which our friend, Frank Todd, planned. But while plans for the building, on this showing, are being made, it still remains true that the fund is insufficient to give to the University and to his memory the large monument appropriate to the occasion.

The Clinic is planned for fifty beds, but it should be planned also for the achievement of the highest results, in teaching and research and in human service, in Doctor Todd's chosen specialty. He meant it to be an instrument of progress. It was the inspired principle of the man that the status quo stands only for the basis of betterment. It is but the stepping-stone to higher things. The Clinic needs adequate plan, but it needs also endowment to enable it to "carry on" as its designer always did.

The writer suggests that the alumni of the Medical School see to it that it reaches at once the generous proportions that will insure its being the living, perpetuating, achieving thing he wanted it to be.

R. O. B.

As Others See Us

It is extremely difficult for members of the medical profession to understand the attitude of the lay mind in relation to the art and science with which we are most concerned. While there is presented to the physician in bold relief an almost innumerable array of facts, a constantly increasing mass of incontrovertible evidence which goes to show how well founded and scientifically fortified, from the standpoint of achievement alone, modern medical practice is, it is most difficult for us to realize why the general public fails to a large degree in accepting our point of view.

The question arises—has not the medical profession individually and collectively failed to present the facts to the laity in assimilable form? To take the position that the lay public has not accepted the facts, as they actually are, because of lack of education or intelligence, is a mistake. Such well known authors as Upton Sinclair, Bernard Shaw and more recently John D. Barry, have, it would seem, ample opportunity of ascertaining the facts and yet Sinclair falls an easy prey to the wiles of one of the most colossal fakers known today. Bernard Shaw, likewise, while using terms of the most select English upbraids vivisection with a myriad of arguments, which to the trained physician are recognized as absurd and ludicrous.

More recently in the public press under the caption "Doctors and the Public," Mr. John D. Barry subjects us to a somewhat critical review. The well known conservatism of this writer and the facility with which he takes the reader into his confidence and attempts to disarm him by the subtle expedient of damning us with faint praise; the opportunity afforded such a writer to present his views, which he does in an exceedingly palatable form; the entire absence of any chance for those possessing the facts to dispute or correct his misconceptions and fallacious deductions—all serve to throw light upon the topic under discussion.

The last annual convention of the American Medical Association held in San Francisco seems to be the stimulus which brought from the facile pen of Mr. Barry some expressions regarding the medical profession which are apropos of the subject, "Doctors and the Public." He first compliments the newspapers (and this most justly) for the manner in which they handled the news of the convention. In considering the activities of the various sections, this writer's grasp upon the concept of our scientific

assembly, its hopes and ideals, the benefits to the public which inevitably result from the interchange of ideas and the relating of experience which take place in these assemblages, his appreciation of the effect of years of labor, industry and concentration in the field of practice and research made in the interest of the public is summed up in no uncertain terms when he states that "there was much talk but nothing done." To those of us who know what the widespread dissemination of knowledge through the medical profession means to the public the viewpoint of this writer will be difficult to understand.

Again the efforts of the medical profession to safeguard the interests of the public by more specifically defining the activities of the Red Cross (which by the way he seems to forget is a child of our own creation) are interpreted by him to mean that we fear the Red Cross as a business competitor. This writer's prediction that surgery will in the future become unnecessary by the influence of the mind upon the ductless glands expresses a hope with which all physicians will concur. Fortunately Mr. Barry momentarily drops the veil and makes one question his neutrality while offering the experience of an English speaker who was heckled by some medical students when delivering a tirade against vivisection in this country, a circumstance which he considers characteristic of the medical profession and an evidence of its intolerance.

The criticism by this writer and others as well as that of the general public is not without its bright side and his advice to us to seek assiduously the public confidence may well be listened to with the utmost respect. He calls attention to the fact that most great organizations employ publicity counsel and that this is essential to success. May not this point be worthy of serious consideration by the medical profession? Is it not time that we as a profession take the public into our confidence by the means that have been found most successful by other organizations and in doing so bring to our own ranks any credit we may deserve with benefits to the public which will many times multiply our own?

President Wilbur, of the American Medical Association, has recently stated his belief that the proper application of the knowledge possessed by the medical profession today would undoubtedly increase the average span of life at least ten years. Is not the method suggested by Mr. Barry the advisable one to pursue?

R. E. F.

OBITUARY

DR. JAMES L. LYNCH

Dr. James L. Lynch, a practicing physician in Winona for the past twenty-three years, died Wednesday, June 20, 1923, at his home in Winona at the age of fifty-eight.

Dr. Lynch was born in the town of Wiscoy, Minnesota, July 7, 1865, where he received his early education. He later attended the Winona Teachers College and subsequently taught school for several years in Winona County. Dr. Lynch received his medical training at the University of Michigan, where he was graduated from the medical school in 1900, coming directly to Winona to engage in the practice of medicine.

In 1908 Dr. Elizabeth Lynch became associated with her brother in practice and remained with him until her death in 1918.

Dr. Lynch had long been a member of the Winona County Medical Society and the State Association. As a student and practitioner he proved himself of unusual ability. Sound in judgment, a clear thinker and an ever ready friend in time of distress, he endeared himself to all those who had learned to rely on his professional service. In his death we have lost a valuable friend and fellow practitioner.

C. P. ROBBINS, M.D.

DR. BURTON A. BAIRD

The death of Dr. Burton A. Baird, Prairie City, Iowa, formerly a fellow in surgery with the Mayo Foundation, Rochester, Minnesota, occurred July 7, 1923.

Dr. Baird was born in Prairie City, Iowa, September 14, 1891. He received his early education in his home city and in 1915 was graduated from the medical school of the State University of Iowa. His internship was served in the Montreal General Hospital from 1915 to 1917.

Dr. Baird became a fellow of the Mayo Foundation in 1918, later entering military service, from which he returned in 1921 with the rank of Captain. In December, 1921, he married Miss Beatrice Carroll of Bay City, Michigan, who survives him.

Early in 1922 ill health compelled Dr. Baird to give up his work at the clinic. Every effort was made on his part to regain his health but to no avail. His record, though a short one, shows that whatever he undertook was given his every thought and energy. His untimely death is a great loss and a matter of deep regret to the medical profession.

DR. C. R. WARD

Dr. C. R. Ward, who practiced medicine for several years at Northome and later at Rose Creek, died at the St. Olaf Hospital in Austin, May 30, 1923, following a short illness, at the age of sixty-eight.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION

The next meeting of the Minnesota State Medical Association will be held in Saint Paul, Wednesday, Thursday and Friday, October 10, 11 and 12, 1923. The first day will be given to meetings of the Council and House of Delegates, with the second and third days devoted to the scientific program.

Those desiring further information concerning the meeting may communicate with the Secretary of the State Medical Association, 402 Guardian Life Bldg., Saint Paul, Minnesota.

WABASHA COUNTY MEDICAL SOCIETY

The Wabasha County Medical Society held its annual meeting July 5, 1923, at Wabasha. Following are the officers for the ensuing year: President, Dr. W. H. Replogle, Wabasha; vice-president, Dr. H. E. Bowers, Lake City; secretary-treasurer, Dr. W. F. Wilson, Lake City. Dr. D. S. Fleischhauer of Lake City was elected delegate to the state convention, with Dr. E. H. Bayley of Lake City as alternate.

The program as presented included the following papers: President's address—"The General Practitioner and Public Health Work"—Dr. L. F. Sutton, Mazeppa.

"Treatment of Colitis"—Dr. G. Schmidt, Lake City.

"Practical Application of Epidemiological Observations of Epidemics of Influenza, Encephalitis, Poliomyelitis and Meningitis," with lantern slides—Dr. A. J. Chesley, Secretary State Board of Health, St. Paul.

"Lung Abscess Following Tonsillectomy"—Dr. D. S. Fleischhauer, Wabasha.

In connection with the meeting there was an exhibit of the work of the Division of Child Hygiene by the State Board of Health, under the direction of Miss Ruth Houlton, superintendent of Public Health Nursing.

At the business meeting, the following resolution was passed: "Whereas the methods of Dr. Albert Abrams have been shown to be a palpable fraud, and denounced by the American Medical Association, and

"Whereas, Abrams and his followers are bitter in their abuse of the regular medical profession, and of the regular medical societies; be it

"Resolved, by this society, that the pursuit of Abrams' methods by any member shall disqualify him for membership in this society."

REDWOOD-BROWN COUNTY MEDICAL SOCIETY

The Redwood-Brown County Medical Society held its annual meeting in Riverside Park at Springfield, June 15, 1923. The following officers were elected for the ensuing year: President, Dr. H. M. Juergens, Sanborn; vice-president, Dr. J. Adams, Morgan; secretary-treasurer, Dr. William A. Meierding, Springfield. Dr. J. Shrader of Springfield was elected delegate to the state association meeting, with Dr. J. Adams of Morgan as alternate.

OF GENERAL INTEREST

Dr. R. I. Stewart, formerly of Wendell, is now located at Lindstrom.

Dr. P. A. Schmidt, lately of Renville and Remer, is now located at Mapleton.

Dr. Fred Selle has closed his practice at Winthrop and will locate in Milwaukee, Wisconsin.

Dr. C. H. Sherman has disposed of his practice at Marine-on-the-St. Croix and has located at Bayport.

Dr. P. J. Griffin, formerly of Fertile, has moved to Detroit, Minnesota, where he will continue his practice.

Dr. E. J. Borgesen, Hanska, recently returned from a two weeks' trip through northern Minnesota.

Dr. O. A. Oredson of Duluth has been appointed head of the free municipal clinic at St. Mary's Hospital.

Dr. A. E. Lange of Rochester has moved to Walla Walla, Washington, where he has taken up his practice.

Dr. John T. Bowers recently became a member of the staff of the Physicians' Hospital at Thief River Falls.

Dr. Millard C. Hanson, a graduate of Rush Medical College, recently opened a medical practice at Breckenridge.

Dr. H. A. Hartung of Le Sueur recently returned from Chicago, where he completed a course in post-graduate work.

Dr. L. E. Nelson of Minneapolis has recently become associated with Dr. J. C. Jensen in his practice at Hendricks.

Dr. C. T. Ekelund, formerly of New Ulm, is now located at Hibbing, where he is a member of the staff of Rood Hospital.

Dr. I. J. Murphy, Minneapolis, has been appointed to supervise x-ray treatments for ex-service men of the 10th District.

Dr. A. G. Churchill, formerly of St. Paul, is now engaged in surgical work at the Great Lakes Naval Hospital, Great Lakes, Illinois.

Dr. and Mrs. R. G. Hassett, formerly of Minneapolis, are now located at Bird Island, where Dr. Hassett will open a medical practice.

Dr. A. A. Rankin, Waconia, has purchased the practice of Dr. H. D. Diessner, who is leaving Waconia to take up special work in Chicago.

Dr. Harold LeRoy Goss has announced the opening of his offices at 910 Donaldson Building, Minneapolis, for the practice of ophthalmology.

Dr. C. G. Quammen of Delavan sailed last month for a visit to his former home in Norway. Dr. Quammen will return in about six months.

The marriage of Dr. S. P. McDaniel of Mountain Iron to Miss Golda Rader, Manhattan, Kansas, was solemnized at Duluth, Saturday, June 16.

Dr. C. M. Smith, formerly of Coleraine, is now associated in the practice of medicine with Dr. S. H. Boyer and Dr. A. J. Braden at Duluth.

Dr. L. L. Hardt has resigned his position in the Mayo Clinic, Rochester, to take charge of the medical work in the Sheridan Clinic of Chicago.

Dr. Chester J. Sturges, who recently completed his internship in a Nebraska hospital, is now associated in practice with Dr. J. J. Catlin of Buffalo.

Dr. J. I. Mitchell, who has been a member of the Mayo Clinic, Rochester, for the past four years, is now associated with the Campbell Clinic, Memphis, Tennessee.

Dr. Thomas Lowe, Jr., who has been associated with the Home Hospital at Slayton for the past year, has resigned his position and will locate at Gibbon for private practice.

Dr. and Mrs. E. H. Nelson and daughters, Lucile and Marjorie, have returned from a three weeks' trip on the Great Lakes to Buffalo, New York, and other eastern points.

Dr. and Mrs. Francis B. Kingsbury and family of Minneapolis have gone East, where Dr. Kingsbury will continue the practice of medicine. They will make their home in New York City.

Dr. Oliver C. Melson and Dr. William McK. Craig of Rochester recently returned from a trip to California, returning by way of the Canadian Rockies, stopping at Lake Louise and Banff.

Dr. L. B. Wilson, Rochester, has been appointed a member of the Council on Education of the American Medical Association, replacing Dr. Ray Wilbur, who is now president of the association.

Announcement has been received of the marriage of Dr. A. T. Farisy of Fairfax to Miss Irene Poss of Franklin, which occurred at Franklin, June 26, 1923. Dr. and Mrs. Farisy are now at home in Fairfax.

Word has been received of the marriage of Dr. Irene Neumeyer of Minneapolis to Dr. Percy L. Owens of Buffalo, N. D. Both Dr. and Mrs. Owens are graduates of the University of Minnesota Medical School.

Dr. H. O. Skinner and family of Saint Paul have returned from a two months' motor trip in the East. At Atlantic City, Dr. Skinner attended the American Institute of Homeopathy, before which he read a paper on "Pneumonia in Children."

Dr. Sanj Solhaug has announced the opening of offices in the Donaldson Building, Minneapolis, for the practice of medicine. Dr. Solhaug recently received the degree of Ph.D. from the University of Minnesota, where he completed his medical course in 1917.

Dr. G. G. Morehouse of Owatonna was elected secretary of the tri-county tuberculosis sanatorium commission, which will supervise the erection and affairs of a proposed \$100,000 sanatorium for tuberculous patients of Steele, Freeborn and Faribault counties, at the first meeting of the body held in Albert Lea in June.

Thomas Hospital, Minneapolis, which during the past two years has been devoted to the care of the veterans suffering from tuberculosis, will now be made available to private patients. This has become possible because of the present policy of the Government to discontinue the use of contract hospitals.

Dr. Joseph Nicholson was re-elected president of the Northwestern Medical and Surgical Association at its annual meeting held at Brainerd, June 12. Dr. Nicholson has established a general hospital known as the Northwestern Hospital in Brainerd. He received his degree in 1903 at the University of Minnesota and has practiced in Brainerd since graduation.

Dr. S. Marx White and his daughter, Miss Betty White, returned in July from a trip through the Yosemite National and Glacier National parks. While in California Dr. White and Miss White were the guests for a day of Dr. and Mrs. Ernest Mariette at Carmel-by-the-Sea. Dr. and Mrs. Mariette, who were married June 9 at the home of Mrs. Mariette's parents, Mr. and Mrs. David P. Jones, Minneapolis, went to California on their wedding trip.

William Henry Eustis, former mayor of Minneapolis, has presented the University with a million dollar gift. The gift includes a forty-four acre tract of land on the Minneapolis side of the Mississippi River, about a mile above the government dam, where a convalescent home, providing for 250 children suffering from orthopedic conditions, will be erected. Provision is also made for a fifty-bed orthopedic hospital to be a part of the University hospital system, which will probably be erected on the campus. Children will be eligible to treatment whether their parents are able to pay a fee or not.

Adjoining the tract on the river, Mr. Eustis has already presented to the city of Minneapolis a site for the Dowling School for Crippled Children, a memorial to the late Michael Dowling, an Olivia banker.

County commissioners in Minnesota have been allotted the duties formerly given judges of probate, of signing certificates of admission to the University of Minnesota Hospital at Minneapolis for residents of a county who in their judgment require treatment at that institution.

Dr. L. B. Baldwin, superintendent of the hospital, has sent out an announcement calling the change in law to the attention of county commissioners.

The original law, passed by the 1921 legislature, provided that a judge of probate should sign the certificate, following receipt of a physician's recommendation. The only change made by an amendment which the recent legislature passed is to give each commissioner the duty of signing this certificate for patients residing in his district in the county.

When patients are sent from Minnesota counties to the University of Minnesota Hospital under the amended law the state meets half of the expense, the cost to the county being reduced by an equivalent amount.

Dr. Baldwin called attention to the fact that the report of the doctors' examination must accompany all applications for admission signed by the county commissioners.

NEW AND NON-OFFICIAL REMEDIES

In addition to the articles enumerated in our July issue, the following articles have been accepted:

ABBOTT LABORATORIES:

Amidopyrine-Abbott Tablets, 5 grains.

Epinephrin Chloride Solution-Abbott.

GENERAL CHEMICAL CO.:

Sofos.

ELI LILLY & CO.:

Hletin (Insulin-Lilly), H-10:5 c.c. ampules; H-20:5 c.c. ampules.

POWERS-WEIGHTMAN-ROSENGARTEN CO.:

Sulpharsphenamine Billon, 0.1 gm. ampules; 0.2 gm. ampules; 0.3 gm. ampules; 0.4 gm. ampules; 0.5 gm. ampules; 0.6 gm. ampules.

Insulin.—An aqueous solution of an active principle from pancreas which effects sugar combustion. The strength of insulin is expressed in "units," one unit being one-third of the amount required to lower the blood sugar below 0.045 per cent and cause convulsions in a rabbit weighing 2 kg. which has been previously starved for twenty-four hours. The administration of insulin to diabetic dogs and to man in severe cases of diabetes mellitus restores to the body the lost ability to oxidize carbohydrate, and glycogen is again stored in the liver. If insulin is administered at suitable intervals to a person suffering from diabetes mellitus, the blood sugar is maintained at a normal level and the urine remains free of sugar. Fat is also burned and, as a result, ketone bodies do not appear in the urine and diabetic acidosis and coma are prevented. The administration of insulin is indicated in cases of diabetes mellitus which cannot be controlled satisfactorily by dietetic treatment. Overdosage of insulin is followed by the development of serious symptoms which demand immediate treatment. Insulin is administered subcutaneously one, two or three times a day before meals. The dosage required to reduce the blood sugar to the normal level must be established for each patient by determination of the blood sugar before and after administration of insulin. In cases of coma or severe acidosis, an initial dose of 15 or 20 units of insulin may be given, followed at three to four hour intervals by smaller doses with simultaneous administration of glucose.

Insulin-Toronto.—A brand of insulin. It is marketed in 5 c.c. vials containing 10 units in each c.c., and in 5 c.c. vials containing 20 units in each c.c. Connaught Antitoxin Laboratories of the University of Toronto, Toronto, Ontario, Canada.

Quinine Ethyl Carbonate.—The quinine ester of ethyl carbonic acid. Quinine ethyl carbonate was first introduced as euquinine. It is used in place of quinine sulphate and similar soluble quinine salts when a practically tasteless quinine compound is preferred.

Quinine Ethyl Carbonate-M. C. W..—A brand of quinine ethyl carbonate-N. N. R. Mallinckrodt Chemical Works, St. Louis, Mo. (Jour. A. M. A., June 2, 1923, p. 1617.)

Arsphenamine-Mallinckrodt.—A brand of arsphenamine-N. N. R. (see New and Non-official Remedies, 1923, p. 46). It is marketed in ampules containing, respectively, 0.1 gm., 0.2 gm., 0.3 gm., 0.4 gm., 0.5 gm., 0.6 gm. and 1.0 gm. Mallinckrodt Chemical Works, St. Louis, Mo.

Barbital-M. C. W.—A brand of barbital-N. N. R. (see New and Non-official Remedies, 1923, p. 62). Mallinckrodt Chemical Works, St. Louis, Mo.

Cinchophen-M. C. W.—A brand of cinchophen-N. N. R. (see New and Non-official Remedies, 1923, p. 90). Mallinckrodt Chemical Works, St. Louis, Mo.

Mercuric Cyanide-M. C. W.—A brand of mercuric cyanide-N. N. R. (see New and Non-official Remedies, 1923, p. 194). Mallinckrodt Chemical Works, St. Louis, Mo. (Jour. A. M. A., June 16, 1923, p. 1775.)

Insulin (Insulin-Lilly).—A brand of insulin (see Jour. A. M. A., June 2, 1923, p. 1617). It is marketed in 5 c.c. ampules containing 10 units in each c.c., and in 5 c.c. ampules containing 20 units in each c.c. Eli Lilly & Co., Indianapolis, Ind. (Jour. A. M. A., June 23, 1923, p. 1851.)

Amidopyrine-Abbott.—A brand of amidopyrine-N. N. R. (see New and Non-official Remedies, 1923, p. 250). It is marketed in substance and in 5 grain tablets. Abbott Laboratories, Chicago, Ill.

Epinephrin Chloride Solution-Abbott.—A solution containing epinephrine chloride, equivalent to 1 part of epinephrine in 1,000 parts of physiological solution of sodium chloride, preserved by the addition of benzoic acid and saturation with carbon dioxide. For a discussion of the actions, uses and dosage of epinephrine, see New and Non-official Remedies, 1923, p. 112. Abbott Laboratories, Chicago, Ill. (Jour. A. M. A., June 30, 1923, p. 1910.)

PROPAGANDA FOR REFORM

Calcium Therapy in Tuberculosis.—From a review of the literature, Mayer and Wells concluded that there is no convincing clinical evidence of the value of calcium administration in tuberculosis. They believe that no deficiency in blood calcium exists in tuberculous patients. From carefully controlled animal experiments these investigators conclude that calcium administration does not affect the course of tuberculosis in animals. If the use of calcium compounds in the treatment of tuberculosis is to be continued, clinical experiments of a scientific character should be conducted. At the present time there appears to be no scientific basis for the use of calcium in tuberculosis. (Jour. A. M. A., June 2, 1923, p. 1619.)

Progress and Conservatism in Therapeutics.—The Committee on Therapeutics of the Council on Pharmacy and Chemistry has published a communication calling attention to two books which physicians should have—New and Non-official Remedies and Useful Drugs. It is explained by the committee that for eighteen years the Council has done its utmost to bring before the medical profession the truth concerning the new proprietary medicinal preparations which are being offered to the profession. The work and functions of the Council are discussed, and it is explained that while the Council was organized primarily to put a stop to the exploitation of proprietary medicines under false claims and the use of secret preparations, its activi-

ties have broadened until its work may now be characterized as a "propaganda for the rational use of drugs." The communication concludes: "New and Non-official Remedies" and "Useful Drugs" together furnish information concerning all drugs, old and new, which are at present essential to, or give promise of value in, the practice of medicine. They have been compiled with a special object in view, namely, to meet the needs of the student and practitioner of today. The report is signed by C. W. Edmunds, M.D., Professor of Materia Medica and Therapeutics, University of Michigan, Ann Arbor, Mich.; John Howland, M.D., Professor of Pediatrics, Johns Hopkins University, Department of Medicine, Baltimore, Md.; Ernest E. Irons, M.D., Ph.D., Associate Professor of Medicine, Rush Medical College, Chicago, Ill.; W. T. Longcope, A.B., M.D., Professor of Medicine, Johns Hopkins University, Department of Medicine, Baltimore, Md.; G. W. McCoy, M.D., Director Hygienic Laboratory, U. S. Public Health Service, Washington, D. C.; W. W. Palmer, B.S., M.D., Bard Professor of Medicine, College of Physicians and Surgeons, Columbia University, New York City; Francis W. Peabody, M.D., Professor of Medicine, Medical School of Harvard University, Boston, Mass.; L. G. Rowntree, M.D., Sc.D., Professor of Medicine, Mayo Foundation, Rochester, Minn. (Jour. A. M. A., June 2, 1923, p. 1635.)

More Misbranded Nostrums.—The following preparations have been the subject of prosecution by the federal authorities charged with the enforcement of the Food and Drugs Act: Woods V. Tabules (Edward J. Woods), containing zinc phosphid, strychnin and plant extractives. Lukosine (National Drug Co.), a powder containing approximately 80 per cent of boric acid and small proportions of zinc sulphate, alum and a salicylate, and traces of alkaloid, phenol, thymol and menthol. Eckman's Alterative (Burrows-Little-White Co.), consisting essentially of 94.4 per cent of water flavored with clove oil, 3.3 per cent of calcium chlorid and 2.3 per cent of plant extracts. Gombault's Caustic Balsam (Lawrence-Williams Co.), a mixture of a fatty oil with approximately 20 per cent by volume of oil of turpentine. McGraw's Oil of Life (McGraw Remedy Co.), consisting approximately of 95 per cent of kerosene and small proportions of turpentine oil, tar oil and camphor. Vital Sparks (Hollander-Koshland Co.), gelatin capsules containing a fatty oil, colored red, and a sugar-coated pill of zinc phosphid, damiana and strychnin. Mydyl Antiseptic Wafers (Chas. S. Ruckstuhl), composed of borax and starch. Syrup Leptinol (Balsamea Co.), consisting of *Lep-totaenia dissecta* (a plant belonging to the parsnip family), sugar, glycerin, alcohol and water. Sangvin (Dr. M. Spiegel & Sons), composed essentially of plant drugs, including a laxative drug, sugar, alcohol, glycerin and water. Peterson's Ointment (Peterson's Ointment Co., Inc.), a petrolatum ointment containing zinc oxid, tannin, phenol and camphor. (Jour. A. M. A., June 9, 1923, p. 1710.)

Cod Liver Oil in Tuberculosis.—Experiments carried out in the Hygienic Laboratory of the U. S. Public Health Service to determine the effect of cod liver oil on the tuberculosis of the guinea-pig failed to show any definitely beneficial effects. There was no evidence of the deposition of calcium when this element was administered along with the cod liver oil. These results warn against unwarranted optimism and justify critical investigation whenever cal-

cium or cod liver oil are lauded as a specific in tuberculosis. (Jour. A. M. A., June 16, 1923, p. 1778.)

Peptone in the Treatment of Migraine.—The Council on Pharmacy and Chemistry publishes a preliminary report on the experimental status of the use of peptone in the treatment of migraine. Drs. Joseph L. Miller and B. O. Raulston report that the intravenous administration of peptonum-siccum-Armour brought about improvement in a considerable number of cases. The Council points out that commercial peptones are heterogeneous mixtures of uncertain composition, and that the results reported may have been due to tissue impurities rather than to peptone itself. It is, therefore, evident that the reported results cannot be made the basis for a rational treatment of migraine. Peptonum Siccum is stated by Armour & Co. to contain 90 per cent of protein. Seventy per cent of the protein content is in the form of peptone and secondary proteoses, while the remaining 30 per cent is in the form of amino-acids. Those who wish to make experiments with peptone in the treatment of migraine should use the particular peptone used by Miller and Raulston, or one which has an essentially similar composition. (Jour. A. M. A., June 30, 1923, p. 1910.)

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

STATED MEETING HELD FEBRUARY 8, 1923

THE PRESIDENT, DR. R. C. WEBB, IN THE CHAIR

THE VALUE OF SURGICAL TREATMENT OF ACUTE HEAD INJURIES

DR. A. W. AEDSON OF ROCHESTER, MINNESOTA

In view of the numerous automobile accidents, head injuries are becoming more frequent and necessarily more attention must be given to the treatment of these various injuries. Although exploration and decompression is definitely indicated in a large group of patients suffering from such conditions, surgery is often contra-indicated.

There are those patients who have suffered an injury to the head without fracture of the skull and with concussion, but without symptoms of compression. Such patients should be placed in bed, observed closely, have repeated spinal punctures if there is evidence of increased intracranial pressure due to edema, and if at any time there are indications of a progressive lesion, an exploration is then justified.

Another group comprises those patients who have fractures of the skull and who are unconscious, with symptoms of concussion and with mild symptoms of compression. If the fracture is a comminuted one, it should be taken care of, first by removal of any foreign bodies or fragments of bone and control of hemorrhage. If the fracture involves the base, repeated spinal punctures are advantageous, but if the patient remains unconscious after a few hours, and particularly if respiration and the pulse becomes more labored, a decompression and exploration should be performed. Usually a right decompression is the one of choice, but if there are cerebellar symptoms, occasionally a cere-

bellar exploration is indicated. It is very urgent, of course, that measures be instituted without unnecessary delay, since very little can be accomplished if the patient is in extremis.

The third group consists of those patients who are seen in a critical condition, having marked symptoms of cerebellar compression with stertorous breathing, slow pulse and high blood pressure, resulting from very severe injuries. Occasionally an operation is of value, but too frequently surgery is useless in treating these cases. It is questionable whether it is advisable to do anything more than in the way of repeated spinal punctures and treatment of the local injury. The administration of intravenous hypertonic salt solution is of some value if there is plenty of fluid in the ventricles, but is of no value if the ventricles are compressed by cerebral edema. Decompressions or explorations can ordinarily be performed under local anesthesia and these procedures should be employed if repeated spinal drainage fails to give relief; surgery should be instituted sufficiently early to prevent progression of symptoms, but should not be undertaken in the case of a patient with only slight injuries nor in the cases of patients whose symptoms can be controlled by spinal punctures; neither should they be instituted when the patient's symptoms are slight, as such procedures in themselves have a sequela in the form of functional disorders. One must bear in mind always the possibility of an extra-dural hemorrhage and, while the symptoms may be few and not severe, there is danger on the second and third day of developing compression symptoms. Whenever there is evidence of a localized lesion it is well to explore the patient.

Head injury patients should be kept under observation for a year or two after the injury occurred; by this I do not mean that they must necessarily be seen at frequent intervals, but they should be seen often enough to emphasize the necessity of avoiding strenuous mental activities, and of having plenty of recreation, to administer nerve sedatives, to advise relative to the possibility of nervous phenomena; and most important is the necessity of encouraging the patient to believe that he will recover. It is quite impossible at the time of injury to forecast which patients may develop epilepsy, neurosis, or psychosis; if, however, the patient is properly advised and directed, many of the subsequent complications sometimes following injuries of this nature can be avoided.

As a rule very little is accomplished by filling skull defects; occasionally such measures are necessary for cosmetic reasons and sometimes there is a definite irritation which indicates filling the defect; if this be true, a bone plate gives better results than the celluloid or silver plate. If the defect is over the vertex or parietal region, a celluloid plate can sometimes be used, but too much benefit should not be promised following such closures. Although we should warn the patients relative to assuming too much mental responsibility, still encouragements in the way of resuming their regular duties in moderation as soon as possible should be given to avoid making invalids of this type of patient.

RESUME

Thorough diagnostic measures should be employed in arriving at a definite conclusion as to the diagnosis of head injuries, and if it is decided to operate on the patient, this

should be done as soon as the shock has been treated, performing the operation with the patient under a local anesthetic and before marked symptoms of compression have developed.

DR. ARTHUR A. LAW: Dr. Adson has so thoroughly covered every point relative to acute head injuries that he has stolen the thunder of most of those who wish to discuss his masterly paper. One or two points occur to me which I simply wish to discuss to give added emphasis to his admonition.

First, I am sure the profession is prone to make light of many head injuries. In looking back over a period of over thirty years' experience I am impressed by the number of serious head injuries which were picked up after a preliminary survey which seemed to indicate that the injuries were trivial. We like to quote to our students Murphy's assertion that he personally would rather be dead than be struck on the head and rendered unconscious for a few moments, explaining this by saying as Dr. Adson so ably stated that we never know the end result of a head injury. We would wish to emphasize the necessity of careful stereoscopic x-ray studies of every head injury. Only by such adjuncts to diagnosis can we pick up the obscure fracture cases which cannot be diagnosed in any other way. Again may I emphasize that we should be careful and guarded in giving our prognosis in any head injury. In reporting to corporations, report to the effect that you are unable to prognosticate what the end result of this injury will be. I would call your attention to the constantly increasing reports from centers where much industrial or traumatic head surgery is done, to the effect that good results are being obtained by the relief of intracranial pressure through decompression. I do not wish to be understood as advocating decompression unless it is indicated. I do wish to be understood as affirming, however, that this measure is not resorted to as often as it should be.

DR. J. FRANK CORBETT: Spinal puncture is a procedure I wish to discuss in fullest detail. Dr. Hirschfield has collected data from twenty-five skull fractures in my service that I will use as illustrations. With Dr. Hirschfield I made a careful study and analysis of twenty-five severe head injuries. These cases gave evidence of severe laceration of the brain. The spinal fluid in all was blood stained for a period of time. Choked disc did not occur in any, but so far as our records go there were changes indicative of increased intracranial pressure in that there was blurring of the nasal half of the disc. These cases gave one the general impression of edema of the brain. They were treated with repeated spinal punctures, making it the rule to reduce the spinal pressure to normal limits as often as was thought best in each case. The cases in this series were unusually severe. Of the basal fractures, three showed loss of light reaction and two reacted. Of the vault all gave light reaction. Of the basal and vault fractures nine gave no reaction to light and five gave reaction. Of all cases that gave no reaction to light, death ensued in six cases and six recovered. There was inequality of pupils in two basal fractures, in one vault fracture and six basal and vault. There was paralysis of extra ocular movements in three of the basal fractures, in none of the vault fractures and in six of the basal and vault fractures. In these, internal

strabismus was reported once and external strabismus twice. The pupils were contracted in four of the basal and vault fractures. In three basal and vault fractures the pupils were of normal size. One case had irregular pupils due to syphilis that was discovered at autopsy. The eye findings gave one a good index to the grade of severity of these cases. At one time it was thought that loss of light reaction in a basal fracture indicated a fatal prognosis. There is definite bleeding from the ears recorded in none of these cases. Of the basal cases one died and two recovered. Of the vault cases there were two deaths and four recovered, while in the basal and vault there occurred six deaths and ten recoveries. Total deaths, nine; recoveries, sixteen.

The cause of death was as follows: Meningitis in one operated case of vault fracture; in two operated cases of basal and vault fracture; in two non-operated basal and vault, and in one non-operated basal. Shock, two cases. Hemorrhage, one case. Death from hemorrhage, shock and meningitis, nine. This seems to leave no deaths from brain edema, usually a prolific cause.

The condition on admission was as follows: Deep coma occurred thirteen times, distributed as follows: basal and vault, eight; vault, three. Semi-coma occurred ten times, distributed as follows: Vault, two; vault and basal, six; basal, two. Intermittent coma and semi-coma in one vault and basal fracture. Of incidental interest is the occurrence of a positive Babinski with no associated or later paralysis. These included two vault fractures, one of which was blind for twelve hours; three basal and vault fractures, of which one had Jacksonian attacks, and one basal. Paralysis of the seventh and eighth nerves occurred twice.

The relation to brain injury and edema is shown to some degree by the spinal manometer reading. The average reading was 11 mm. of mercury when this was done within three hours after the accident. In one instance this was 16 mm., which was the highest. There was one case not included in the above average where the manometer registered 21 almost immediately after the accident. In this case there was no blood in the spinal fluid, but there was an enormous depressed fracture. The pressure was 15 mm. in this case at the end of twenty-four hours. Even the cases in profound coma on admission did not show any increase above what has been given. Some of these cases improved at the end of twenty-four hours, but among those that got worse there were five, and in these the average pressure was 25. That is, edema had been added to original trauma. In addition, in one case edema was delayed and showed a maximum as indicated by spinal reading of 28 in three days. With all cases the average manometer reading was 17.1 at the end of twenty-four hours. Of these cases Case 5253 was most striking. This man was injured at 9 a. m. and his mind was clear at 1:59 p. m. He became slightly drowsy and almost comatose at 5 p. m. His manometer reading at 5 p. m. was 23. He immediately cleared after puncture and his reading remained at 16.

Coma may exist as a result of the brain trauma without increased intra-spinal tension, but the usual subsequent occurrence of edema is apt to complicate the condition by further increasing intracranial tension. Edema has never been very evident before eight hours after accident. There-

fore, early spinal puncture is not advisable unless there is special reason for it.

DR. J. F. CORBETT presented two neurologic cases as follows:

CEREBRAL TUMOR

A male, aged 30, was admitted to the hospital January 10, 1923. The past history was essentially negative. The patient finished grade school at fourteen and then went to work as a common laborer and mechanic. The general history is practically negative as taken by assistants. At present patient has hallucinations in which he sees angels, the Deity, etc. Delirium is also present to the effect that a man who committed suicide did this because of an argument he had had with patient.

Complaints: Headache, frontal in type, and also pain in the upper cervical region; duration two months, constant in character with occasional remission for two or three hours. Very severe headache two or three times a day, lasting for several minutes, causing patient to cry and groan. Pain in both ears past four or five weeks. Pain steady in character and not particularly severe. No impairment of hearing and no running ears. Vomited four or five times during the last four days. No diplopia or visual disturbance, but tires easily when attempting to read.

On examination patient was found to be well developed and fairly nourished. Patient has periods of drowsiness in which he lies quietly in bed, and occasionally periods of irritability when he complains of excruciating headache. His pulse rate was 50 and his temperature 98. His head was entirely negative. He had very marked bilateral choked disks and his vision was very markedly impaired. His right pupil was slightly larger than the left. Both pupils were slightly irregular and reacted sluggishly to light and sustained their constriction very poorly. There was a small ulcer on the right cornea. The blood pressure was 118—60. The chest and heart were normal. The abdominal reflexes were slightly exaggerated, both upper and lower, the patellar being slightly more active on the right side than on the left. There was a questionable right Babinski, the left negative. All modifications of Babinski negative. There was a questionable ankle clonus on the right side, negative on the left. The joint sense of the great and second toes (both feet) was apparently markedly impaired. The legs could not be extended on the flexed thigh over an angle of 100 degrees.

On January 20, 1923, an operation was performed. A spinal puncture needle was introduced into the posterior horn of the right ventricle. The needle was introduced 4 cm. above the superior curved line and 2 cm. beyond the middle line. It was introduced in an upward and outward direction. Cerebrospinal fluid was found at a depth corresponding to nearly the entire length of the spinal puncture needle. Thirty-five c.c. of cerebrospinal fluid was withdrawn and 35 c.c. of air injected to take its place. The air had to be introduced under considerable pressure.

On January 26, 1923, a second operation was performed. An osteoplastic flap was made in the temporo-parietal region and its center removed for the purpose of decompression. No fluid was obtained by puncturing the ventricle. The brain bulged forward but no tumor was visualized although infiltrating tumor tissue was felt with a Cushing stilette.

The ventriculogram showed a single normal ventricle and complete obliteration of the opposite one. This predicted a tumor mass in the neighborhood of the ventricle. This was confirmed at operation.

The flap was brought into place with chromic catgut and silk-worm sutures.

INJURY OF FOURTH AND FIFTH CERVICAL NERVES

The patient, a male, aged 60, was knocked off a scaffold at 11 a.m., August 5, 1922. He stated that he was struck in the upper part of the back. He at once noticed numbness in his legs and arms and inability to move same. At 1 p.m. of the same day there was a spastic paralysis of both arms and legs with a positive bilateral Babinski. At 3:30 p.m. he could move the toes of his left foot. At 5 p.m. he was able to flex the left knee slightly.

August 6, 1922, he had all motions in his left lower extremity with a bilateral Babinski and negative abdominal reflexes.

In view of the paralysis of the upper extremities and lack of abdominal breathing it seemed the lesion was in the region of the fourth and fifth cervical nerves. The patient could not void urine and catheterization was necessary. The next day he was able to move his left leg more freely and void urine. Two days later he could move the right leg slightly, also the left hand, but he had to be catheterized.

August 11, 1922, had inability to control his bowels. Three days later he was able to move his left leg well and the right leg slightly. He could move all the fingers of the left hand and the left forearm slightly.

August 20, 1922, he again had retention of urine. September 6, 1922, he could move both lower extremities well and was able to move all of the left side up to the face. September 11, 1922, he was allowed up in a wheel chair an hour and one-half each day.

January 2, 1923, Dr. Angus Morrison's examination disclosed abdominal reflexes not obtained, positive bilateral Babinski, pin prick acutely felt all over skin surface, deep reflexes markedly exaggerated on both sides and ability of patient to perform all movements of the left arm and leg, the movements of the right arm and leg being distinctly limited.

There was flaccid paralysis in the distribution of the fourth and fifth motor roots of the cervical plexus on the right side. There was voluntary motion elsewhere, but all the muscles except those recorded as flaccid showed spasticity. There was a picture of both an upper motor neurone lesion and a lower motor lesion from a single injury.

TRAUMATIC WOUND OF THE KNEE JOINT WITH FOREIGN

MATERIAL IN THE JOINT

DR. R. C. WEBB presented a man 41 years of age, who was injured five months previously while getting off a moving train. His right knee joint was torn open, presenting a transverse wound 4 inches long at the proximal edge of the patella on the anterior surface of the thigh. The quadriceps tendon was torn from the patellar base or proximal portion, exposing the bony surface in the proximal fourth of the anterior surface of the patella, and the synovial capsule was torn from its attachment at the cartilaginous articular surface of the proximal or superior fourth of the patellar circumference. The wound was dirty and ragged

and ground with dirt and debris and there were cinders in the knee joint.

In addition to this wound there were other wounds. His left leg had been nearly amputated by the car wheels just below the middle of the leg and was hanging by a few tendons. There were two scalp lacerations. There was a large wound 6 inches long over the great trochanter of the right femur which extended over the upper end of the femur and down to the region of the femoral neck.

He was brought to St. Mary's Hospital in an ambulance and operation was performed three hours after the injury. The blood pressure before operation was 110 systolic and 74 diastolic.

The scalp wounds were cleansed and sutured lightly. The wound in the right hip was debrided carefully and left wide open, with four Carrel tubes in place passing to the deepest portions of the wound. The left leg was amputated as low as possible, the wound being left wide open with four Carrel tubes over the wound.

With an entirely clean field the right knee was operated upon. A very careful and complete debridement was performed upon the soft parts, removing all foreign material. The knee joint was thoroughly irrigated with normal saline. The raw portion of the patella where it was devoid of soft parts was painted with alcohol and again irrigated with saline. The capsule was drawn down over the raw surface of the patella to a point where it could be sutured to the torn attachments of the quadriceps muscle on the anterior surface of the patella. The quadriceps tendon was then drawn down and sutured over this first line of sutures. The skin and subcutaneous tissue was left open and a Carrel tube placed in the wound. There were no splints applied.

Postoperative course. A special nurse was detailed to see that he carried out active motion of his knee with each irrigation of Dakin's solution. There were three small areas in the knee wound which sloughed, giving a very small but purulent discharge until the Dakin's solution finally dissolved them and they were replaced by granulation tissue. This required about two weeks. The Dakin solution irrigations occurred every two hours, day and night. He was not awakened to carry out the movements but carried them out whenever he was awake. During the first month the motion at the knee was very slight, possibly 20 degrees at most. We were very cautious, inasmuch as the quadriceps tendon was merely held to the patella by chromic catgut sutures. There was a slight accumulation of fluid present in the knee joint during the first week, but at no time were the symptoms such as to require aspiration. He was irrational at times during the first four days. He complained on beginning the knee motions, saying there was "quite a bit of pain" at first, which, however, passed away after five or ten minutes. Two weeks after the injury he could flex his knee to an angle of 150 degrees. The knee wound was entirely healed five weeks after injury. He was in bed two and one-half months, and was up on crutches, using his right leg only, on February 1, 1923. March 15, 1923, a temporary artificial limb was supplied. March 30, 1923, he was discharged from the hospital, walking with a cane. He is now able to flex his right knee to a right angle and

at times slightly beyond a right angle. The right knee is still improving.

Meetings of the society will be held the first Thursday in each month from October to May inclusive at the various hospitals in Minneapolis. The program will consist of morning operative clinics, afternoon diagnostic clinics, and evening didactic sessions, beginning October, 1923. Members of the medical profession are invited to attend these meetings.

DR. A. A. ZIEROLD, Secretary,
520 La Salle Building, Minneapolis.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

TONSILLECTOMY. Greenfield Sluder, clinical professor and director of department of Rhinology, Laryngology and Otology, Washington University, School of Medicine, Baltimore. 176 pages. 90 illustrations. St. Louis: C. V. Mosby Co., 1923. Cloth, \$5.00.

CEREBROSPINAL FLUID. Abraham Levinson, B.S., M.D., associate in Pediatrics, Northwestern University Medical School. Second edition. 267 pages. Illustrated. St. Louis: C. V. Mosby Co., 1923. Cloth, \$5.00.

INTERNATIONAL CLINICS. A quarterly of illustrated clinical lectures and especially prepared articles by leading members of the medical profession throughout the world. Edited by Henry W. Cattell, A.M., M.D., Philadelphia, in collaboration with several others. Volume 2, Series 33. Philadelphia and London: J. B. Lippincott Co., 1923.

THE HOPE OF THE VARIANT. By John George Gehring, M.D., Sc.D. Price \$2.00. 252 pages. New York: Chas. Scribner's Sons, 1923.

This book, written by a physician evidently occupying his later years with the care of the nervously and mentally disturbed, seems to deal plainly with certain very pressing problems that now concern a host of thoughtful people. The book appears to be primarily intended for "the general practitioners of medicine," although its arrangement, style and arguments are such that the general reading public should enjoy it and profit by it. The book deals with much of the material that has greatly interested the different "psychological study classes," and therefore should merge well into the reading done by those drawn into the study of that interesting phase of human existence.

The reviewer soon encounters the well known terms, "sub-consciousness," "suggestion," "auto-suggestion," and many other commonly used terms. To begin with, the author takes up the matter in a wholly reverent manner, and in his consideration of sick and unhappy mankind adopts the basic and obvious principle that man cannot be considered apart from "his complete equipment. * * * We shall keep ever in mind * * * his human soul, which is so intimately interwoven with his destiny and cannot be ignored."

Man in perfect equilibrium is discussed as an individual who has found his environment, his capacity and his happi-

ness in the proper and orderly succession of birth, training and then productivity. He rightly rebels against the obvious tendency to standardize everybody, forgetful of the normal individual variations. This recognition of these physical and mental variations, the great diversity of reaction on the part of conscious and subconscious entities, provide the maelstrom, the hubbub, that comprise our lives. To the subconscious, or in plain ordinary language, our vegetative existence, common to the dog, the cow and all living things, is added our higher cerebration, with its ultimate product, a *conscience*. When our great inheritance of instinct (so closely tied up with our vegetative existence) and our habits (the product of good or bad training) come into conflict with our higher intellectual creations, it is then that all sorts of reactions result, and it is seen that an understanding of man, as a simple mass of clay, is quite impossible.

The body of the book deals much with how to understand, prevent and obviate the undesirable reactions. The man who was Robert Herrick's original for his famous essay, "The Master of the Inn," had the most wholesome way of illustrating each of his concepts with first-hand personal experiences and contacts with actually perturbed folks. In his acknowledgment of the "overflow of the subjective interfering with the objective," the medical reviewer can detect the phase of the "physical self" most implicated in producing the general trend of "psychic depression": it is evidently vagaries of the digestive tube according to the author's own experiences. Nevertheless, he is by no means a faddist, and the best medical judgment of today would no doubt in the main subscribe to his conclusions. He most delicately chides the Fletcherian who would solve all the world's problems by asking man to chew his food instead of his raiment! As to his food choice, he is likewise on firm ground in asserting that man has proven that he can subsist on the greatest variety of food; he is equipped to be omnivorous. Why, therefore, make a big fuss about the type of food chosen? but rather encourage the seeking of that which agrees and gives strength, comfort and vivacity.

He discusses "Suggestion" and Coue together, and gives the French chemist great credit, not for discovery but for the zeal of the enthusiast who has called the crowd to witness that which was perfectly obvious but concealed. He cites many examples, like the well known one of the shell-shocked doughboy who couldn't speak. He landed at the station to be taken up by ambulance to a convalescence hospital. The highly confident ambulance driver bundled him in and tersely stated, "They will have you talking in just two days; they do it to a lot of them." The soldier astonished himself quite as much as the driver by blurring forth in speech at once; if it was to come in two days, why wait!

The author touches a feature that we should all well consider presently: "Many people are taught, but not trained." He would infer that early habits of children as to food choice, bursts of spirit—anger, peevishness—all lay the foundation for those permanent indispositions so aptly described by many as the means by which so many people "enjoy poor health." "Much of life is spent in overcoming the faulty habits originating in childhood." He counsels against even "too much petting" of those who are physically under par, because it is only through resistance and a refusal

to accept bodily infirmity that many of the physically unfit have been able not only to rise above their affliction but themselves as well.

Accepting the "Variant," or the substandard individual, notably of the mental and psychic type, as comprising a fairly large percentage of our population, the author attempts to offer various means for relief. Obsessions (with which so many people of brains and capacity are afflicted) he states are never the result of orderly processes of reasoning, but come from *feeling* alone. Therefore, it is useless to reason with this sort of concept. In like manner, he would aim to displace the various phobias with other habits of "reasonable purpose and desire"; in other words, to simply displace that which is unreasonable, illogical and harmful by that which is purposeful, wholesome and productive.

He pays accurate tribute to the rôle played by "the patient's family": either encouraging the persistence of the malady by undue credulousness, sympathy and concern, or paralyzing the initiative of the afflicted by an attitude of disgust, derision or contempt.

He is not overcritical of his fellow physicians, but, like many other writers, points out the well known failure of many of us to properly evaluate the degree of discomfort that comes to those who are essentially physically sound but psychically badly twisted. He ascribes the growth and success of many of the non-medical healing cults to the lack of interest on the part of the regular medical practitioner or family physician in the plights of those suffering from "emotional restraint," "various types of inhibition," or those plainly muddled up over an agglomeration of fear, apprehension, fatigue and despair—wolves that forage in our mental paddocks. The busy physician can take some comfort from his recital of his experience with a loquacious woman, as recited on page 173: "The writer has often had occasion to marvel over the relief that would come to a patient who has for the first time been permitted wholly to talk himself out." Speaking along this line, note the following: "The lady talked in a manner as though apprehensive lest there might not be time enough given her. During this talk she repeatedly stated that she would need to talk several hours for a number of days in order to explain herself properly." She was given reassurance, and did continue for the better part of three days, at which time she noticed that she had to repeat considerably, and losing interest exhibited great relief, and was willing to accept the physician's verdict!

I would recommend the book as being fair, conservative, accurate and instructive. It should not be too universally applied, like much instruction of this same order. Most physical disorders are accompanied with subjective discomforts and complaints. The individual possessor is unfortunately a poor authority to decide which are which.

E. L. TUOHY, M.D.

TONSILLECTOMY: BY MEANS OF THE ALVEOLAR EMINENCE OF THE MANDIBLE AND A GUILLOTINE. Greenfield Sluder, M.D. 176 pages, 90 illustrations. St. Louis C. V. Mosby Co., 1923. Price \$5.00.

This admirable text on tonsillectomy covers the subject in a more comprehensive way than anything heretofore. Well written and profusely illustrated (90 illustrations), it

gives a thorough working knowledge of the anatomical parts as well as surgical procedures.

Under the title embryology, the blood supply of the tonsil is fully explained. Function of the tonsils is discussed under five different theories, namely: (1) protection, (2) internal secretion, (3) hematopoiesis, (4) elimination, (5) immunity. The author accepts none of these definitely.

Indications for tonsillectomy are given in great detail and are those familiar to men doing this kind of work. Contraindications are stated as (1) hemophilia, (2) status lymphaticus, (3) general conditions, as diabetes, etc.

The author emphasizes preoperative preparation; says morphine should never be given before operation because it abolishes cough reflex; he prefers the complete recumbent position. As to after-treatment—no gargles or applications, morphine in small doses, and tonsil clamp for oozing. Nitrous oxide is given as the anesthetic to be preferred.

In a summary, methods of operating are compared as follows: Sluder technic has the advantage of perfect result, speed, little bleeding, lessened shock, performance by touch alone, little or least trauma and unnecessary destruction, and can be performed with nitrous oxide or local anesthesia.

Great emphasis is laid on the importance of the so-called "alveolar eminence of the mandible," which is a prominent ridge below the molar roots. From the time the instrument is inserted with this eminence as a landmark, the operation is discussed in the very greatest of detail which even the novice would find very easy to grasp.

The volume concludes with a treatise on "Adenoidectomy with Direct Vision" by Dr. Kelly of the Washington University. It is ably presented and of merit. This method certainly would obviate the complications to tubes, septum, etc., which now are of too frequent occurrence.

Dr. Sluder naturally is an enthusiast. His percentage of perfect tonsillectomies seems rather high, and probably is

higher than the majority of operators. In the opinion of the reviewer, the Sluder operation is without a par when speed and lessened trauma are of first consideration, but still cannot *entirely* take the place of dissection and snare, which is a 100 per cent operation in the hands of an able operator.

K. C. WOLD, M.D.

PRACTICAL LOCAL ANESTHESIA. Robert Emmett Farr, Minneapolis. 529 pages, 219 illustrations. Philadelphia and New York: Lea & Febiger, 1923. Cloth, \$8.00.

In this volume a division has been made on the subject material into three sections. The first six chapters treat of the choice of an anesthetic, chemical and physiologic problems relating to both general and local anesthesia, equipment and general technique for the production of local anesthesia, and lastly a review of the anatomy of the sensory nervous system.

Section II, of six chapters, gives detailed instructions for the application of local anesthesia to all surgery except that of the abdomen. Abdominal and pelvic anesthesia are described in Chapters 13 to 18, inclusive. Spinal anesthesia is omitted, as the author pleads insufficient experience.

This book, as the title would indicate, has an eminently practical appeal. Complicated maneuvers are conspicuous by their absence and the technique described is simple and workable. It is well bound, clearly printed, and contains an abundance of instructive cuts. Beyond a discussion of local anesthesia, the reader will find a surprising amount of information on the technique of surgery.

A book of sufficient merit that the future should see a demand for further editions.

DONALD K. BACON, M.D.

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ORIGINAL ARTICLES

GALL TRACT SURGERY*

H. M. RICHTER, M.D.

Chicago

The first stage in surgical results is early diagnosis, so you will pardon my digression to call your attention to a few salient facts frequently overlooked.

Gall stones do not spring suddenly into existence as in the Miltonian idea of creation. The routine history if carelessly taken may state that the trouble began with an attack of sharp abdominal pain, the attack coming on after a heavy meal, and that there have been irregular recurrences since. The story may seem to date from that time. But careful inquiry will practically always elicit the information that for many years before, or possibly during a period of some years many years ago, the patient had digestive disturbances of a peculiar character associated with belching or with a feeling of distention after meals or possibly after certain foods—as meats or fatty foods, etc. With this there may, perhaps, have been some heart-burn or the heart-burn may have been an important part of the story.

But most suggestive is the story of a stomach that refuses certain articles of food or that seems overfilled after a few mouthfuls though the patient seemed to have an appetite up to that moment. These early symptoms with the findings of a careful examination are sufficient to justify a diagnosis of gall tract infection long before stones form. But in practice such a diagnosis is mainly a matter of hindsight instead of foresight. The diagnosis is made most commonly when stones or active infection are present.

Allow me to cover just a few points that are regarded as important in the technique of gall tract

operations. First—as to cholecystectomy versus cholecystostomy. The infected gall bladder has peculiar difficulties in the way of its complete recovery from infection. The structure of its wall combined with the tendency to stasis render the persistence of infection likely. We therefore feel that most infected gall bladders should be removed. We do not remove an apparently normal gall bladder containing a few simple cholesterol stones in young adults nor gall bladders in fair condition in the very aged. Where gall stones are found incidentally in the course of other serious operations we commonly drain the gall bladder and in the presence of very acute inflammation and of jaundice we do not remove it. Otherwise we feel that cholecystectomy is indicated.

The removal of the gall bladder is proceeded with along any of the usual lines. We think it rather cleaner to begin with the cystic duct and peel the gall bladder out of its bed. But a distended gall bladder may often be peeled out more easily in the reverse direction. The first essential feature is that the cystic duct should be definitely visualized before it is clamped and severed. No amount of theoretical knowledge of possible anatomical variations compares with just seeing the part upon which you are operating. The duct should be severed close to the common duct. Though I have never found difficulty caused by the stump of the cystic duct becoming distended and forming a new gall bladder or causing trouble from infection, a few instances of this sort have been reported and it is probably well to take cognizance of the possibility. The cystic artery may be ligated with the duct or separately as appears simplest in the individual case. When the gall bladder is peeled out of its bed there is left behind a sulcus with more or less frayed peritoneal flaps on either side and a cystic duct stump in the grasp of a forceps. The cystic duct should be ligated with the finest catgut that can readily be used. A single ligature without any unusual furbelows suffices. The bile tension in the duct is not comparable with the blood tension in the radial artery and no extraordinary means

*Presented before the Annual Clinic Week, Minneapolis, April, 1923.

are required for its ligation. Having ligated the duct that part of the operation is completed.

The duct is safest when dropped and unmolested. Suturing it behind the peritoneum or doubling it upon itself or tucking it away in some corner is meddlesome surgery and probably an index of meddlesomeness in other stages of the operation. The sulcus in the liver and its free flaps of peritoneum are disregarded except to make certain that no oozing of blood persists. It is unnecessary and therefore pernicious to suture the flaps over the sulcus. The adhesions about this area are caused in the main by the gauze packs and rubber tubes that are left behind. The sulcus is quite innocent and retracts to such an extent as to minimize adhesions to the adjacent stomach or bowel. This then completes the operation of cholecystectomy except that it may satisfy a craving for complete peritoneal toilet to drop the omentum in between the under surface of the liver and the adjacent viscera following the suggestion of E. Wylls Andrews. No drain of any kind is left behind. The absence of a foreign body permits of primary healing with a minimum of adhesions. It minimizes the amount of infection, for a foreign body of any type permits the extension of infection from without, and infection delays healing.

It has been suggested that since bile not infrequently escapes along the drainage tube the drainage tube is a life-saving factor in the prevention of a bile peritonitis. The fact is, however, that it is the drainage tube which prevents the primary healing about the stump of the cystic duct and so permits the bile to escape. Therefore, instead of being a safety factor it is the cause of the bile leakage.

The removal of stones from the common duct through an incision above the duodenum should be followed by closure of the incision by accurate suturing when the surgeon can be sure of the patency of the duct. Suture of this incision is exactly analogous to suture of a similar incision in the intestine. The duct contents, however, are far less infective than those of the intestine and suturing is therefore perfectly safe. In incising the common duct its peritoneal covering should be protected as far as possible and included in the grasp of the suture. The suture material should be of the finest possible character—size 000 catgut is satisfactory. The edge of the incision should be inverted and the suturing should be accurate. Such a line of suture is as safe in the common duct as in

the ileum and requires no further attention. It is as illogical to place a drain in contact with or in proximity to this line of suture as to do so in the case of intestinal suturing. The common duct functionates as the best drainage tube to be had and carries the bile to its normal place in the intestine. The abdomen should be closed without drainage as in cholecystectomy.

The advantages of closing the abdomen without drainage in gall tract operations are those of the avoidance of drainage anywhere. Primary union without infection makes for a more rapid recovery with fewer postoperative complications, fewer postoperative adhesions and a much shorter stay in the hospital.

HOW IS THE OVERWORKED GENERAL PRACTITIONER TO USE INSULIN?*

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In his enthusiasm for elevating medicine to a high scientific plane, the specialist, surrounded by elaborate hospital and laboratory facilities, often fails to realize that the general practitioner, omniscient and omnipotent though he must be, is becoming bewildered in the maze of new and rapidly multiplying technical procedures.

The dietetic management of diabetes is very complex and the successful use of insulin demands accurate diets rigidly adhered to. The publications on insulin that have appeared to date have been addressed for the most part to the specialist, but it is the overworked family doctor with little experience with diabetes, and little laboratory equipment, who must treat all but a small fraction of the diabetics of the country and, if insulin is to be of benefit to the multitude, he must be supplied with simple dietetic directions which he can follow with a minimum of special effort. It was with this idea in mind that this paper was prepared.

THE EFFECT OF OVERDOSAGE, INSULIN SHOCK

Word has come to my ear of practitioners who have been giving insulin without any attempt at accurate control, either of dosage or diet; also of physicians who have discharged their patients,

*Read before the Southern Minnesota Medical Association, Faribault, June, 1923.

after giving a few insulin injections, with the assurance that a "cure" had been effected. Such practices, if due to ignorance, are deplorable; if wilful, constitute treason to medicine of the kind that weakens the confidence of the people in the profession, and drives them into the clutches of the cultist, the chiropractor, and the quack.

It must be remembered that insulin is not an innocuous placebo, like many of the endocrine products with which we have been deluged of late, but a powerful drug. Its improper use, therefore, is as dangerous as would be that of morphin. The estimation of dosage is, moreover, more difficult than in the case of morphin, because it involves not only the amount of insulin, but also the amount of food sugar which is to accompany the insulin into the centers of metabolic activity. Insulin and food must be nicely balanced, for the reason that when inadequate glucose is available, insulin provokes a condition which simulates surgical shock in some respects, and from which the patient may not recover. We have had two near-fatalities and are convinced of the serious danger that confronts the unfortunate patient applying for treatment to a careless or ignorant physician.

The symptoms of insulin shock* are characteristic. The first abnormal sensations are fatigue, drowsiness and anxiety. Then appear tremors, sweating, rapid heart action and dyspnea. Spontaneous recovery may occur provided the disbalance between the dose of insulin and available glucose is not too great; otherwise delirium, convulsions and death can only be prevented by the prompt administration of glucose as an antidote.

THE REQUIREMENTS FOR SUCCESSFUL USE OF INSULIN

In order to avoid such serious accidents, the physician must balance injected insulin with food

of known glucose value, and in this connection he must take into account that not only sugars and starches, but also to a less extent albumins and fats, are converted in the body to glucose. The glucose value of a mixture of food, according to Woodyatt, consists of the sum of its carbohydrate, 58 per cent of its protein, and 10 per cent of its fat. Thus if we are to know how much glucose our patient is getting, we must weigh his food and we must plan diets to contain precise quantities of carbohydrate, protein, and fat. This involves the use of accurate scales for weighing food, available tables of food values,* and a certain amount of planning, but there is nothing in this that is too complex for the little eight and ten year old patients in our hospital diabetic class. There are further considerations of importance, a limit, for instance, in the reduction of the carbohydrate quota, beyond which it is not safe to go. Adams and I have introduced some charts which materially simplify the necessary calculations involved in adjusting diets for patients of different sexes, ages, and weights. However, I believe that still further simplification is desirable and am, therefore, proposing the following procedure.

ROUTINE PROCEDURE FOR ADULT PATIENTS

Assume a body weight about 10 per cent below what would be normal for the patient's height.** Plan the diet to contain 1 gm. of carbohydrate, 1 gm. of protein, and 2.5 gm. of fat for each kilogram (2.2 pounds) of the assumed body weight.***

If food tables and a food balance should not at once be available, the following milk, cream, and egg-albumin mixture will answer until they can be

*Suitable scales may be obtained either from John Chatellon and Sons, New York City, or from the Chicago Dietetic Supply House, 1750 West Van Buren Street, Chicago, Illinois. Very satisfactory and reliable food tables are contained in Bulletin 28, U. S. Department of Agriculture. This publication can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., ten cents in coin to be included with the order.

**Joslin has prepared a card which contains a condensed table of the normal height-weight standards of the Actuarial Society of America. These are published by Thomas Groom and Company, 105 State Street, Boston, Massachusetts, and are for sale by the publishers.

***Diets arranged in this simple manner satisfy Woodyatt's diet formulas within the limits of error of hospital methods and adjust the fatty acid and glucose in the weight ratio 1.5:1. The glucose value of the proposed 1, 1, 2.5 diets is twice their carbohydrate minus 10, and their fuel value is 30 calories for each kilogram of body weight, which is adequate for the metabolic demands of the patient at rest. After the preliminary period of treatment and provided no complications exist, it is safe to increase the fat quota by an additional gram of fat for each kilogram of body weight, thus making the proportions, carbohydrate 1 gm., protein 1 gm., and fat 3.5 gm. for each kilogram and increasing the calories to 40 for each kilogram. The justification for these higher fat diets has been discussed elsewhere.⁷

*The term "insulin shock" is preferred to the more commonly used expressions such as "insulin reaction," "hypoglycemic reactions," and "hyperinsulinemia." The effect of overdosage of insulin is distinctly shock-like, and although some of the symptoms seem to be due to the "reaction" of the organism, in the strict sense of the word, the complete clinical picture provoked by excessive insulin is not properly described as a reaction. The initial symptoms of weakness, drowsiness, and hunger, and the final effects, delirium, convulsions, coma and death, are the result of hypoglycemia. On the other hand, the organism does "react" to such hypoglycemia, and spontaneous recovery is brought about in many cases as a result of this "reaction." The symptoms hyperpnea, tachycardia, tremor, and sweating may be attributable to the "reaction," and in fact, as Boothby and I have suggested, the character of these symptoms strongly suggests that the protective "reaction" consists in part of a spurt of epinephrin from the patient's own adrenal tissue. It seems desirable to attempt a distinction between the action of the drug and the reaction of the organism. The term "insulin shock" covers the entire syndrome and includes both action and reaction.

it advisable to attempt to prevent this by a late afternoon or evening injection, fearing the possibility of shock at a time when it might not be recognized early enough to prevent disaster. In a patient on a properly balanced diet and insulin régime, the amount of this nocturnal glycosuria is very small and may be disregarded with impunity. The dose of insulin should be large enough to keep the urine sugar-free during the day. Hence, continuous collections of urine, impracticable except in well-managed hospitals, may be omitted and attention concentrated on a single specimen passed between 7:00 and 9:00 p.m. This should be sugar-free. Barborka has discussed the behavior of the blood and urine of patients receiving single and multiple divided doses of insulin.

THE TREATMENT OF CHILDREN

It is common knowledge that the diabetes of children is the most rapidly progressive form of the disease. I have seen a child eighteen months of age die in diabetic coma within a week of the appearance of the first symptoms of diabetes, and a number of such stormy cases are reported in the literature. The treatment of young children, even

with the help of insulin, presents difficulties which are not encountered in adults:

Children are very susceptible to acidosis and tolerate poorly high fat and low carbohydrate diets. Acetone bodies may accumulate very rapidly and precipitate coma within a few hours.

Children are more highly susceptible than adults to infections, such as measles, mumps, whooping cough, chicken-pox, rhinitis, tonsillitis, and bronchitis. Such complications, as is explained below, intensively aggravate an existent diabetes.

Children tolerate undernutrition poorly; their food requirements and particularly their protein requirements are high, and consequently the doses of insulin necessary are large in proportion to their body weight.

In children the volume of blood and other tissue fluids is small; consequently the amount of free glucose available for buffering insulin injections is small, and such injections are more likely to provoke severe shock than in the case of adults.

In order to avoid the pitfalls of acidosis on the one hand, and insulin shock on the other, Geyelin has allowed a moderate glycosuria in all his juvenile cases. In the earlier stages of his work, when, with others, he was making an effort to maintain a constantly sugar-free urine, he encountered relatively frequent and sometimes severe symptoms of insulin overdosage; whereas since his later plan was adopted he has had evidence of insulin shock mildly in only one case. Our experience in the treatment of seventeen children under twelve years of age entirely corroborates that of Geyelin, and we believe with him that, for the time being at least, it is unwise to attempt to entirely avoid glycosuria. It is much more important to nourish the little patients back to a good weight and strength, and to guard them against the danger of acidosis; apparently this may be accomplished very satisfactorily despite a persistent low grade glycosuria.

Our procedure in the cases of children with uncomplicated diabetes has been to give a diet containing 2 gm. of carbohydrate for each kilogram, 2 gm. of protein for each kilogram, and fat sufficient to provide adequate calories. We estimate that the calorie requirement of the child at rest will vary with the age from 50 calories for each kilogram, for an age of eight or ten, to 100 calories for each kilogram for an age of two or under. A six year old boy, weighing 20 kg., might receive, for example, 40 gm. of carbohydrate, 40 gm. of protein,

TABLE 1

ABBREVIATED FOOD TABLE

	Carbo- hydrate, Protein,	Fat,
	per cent	per cent
Green vegetables	3	1
Pumpkin, squash, beets, onions, carrots	6	1
Potato, green corn, beans or peas shelled	20	4
Oranges, strawberries, peaches.....	10	1
Walnuts, meats of.....	16	17
Whole milk	5	3
Skimmed milk	5	3
Cream, 20 per cent fat.....	5	3
Buttermilk	5	3
Butter	0	1
Cheese, American	0	29
Cheese, cottage	4	21
Eggs, each	0	6 gm.
Egg white (one)	0	4 gm.
Egg yolk (one)	0	2 gm.
Meat, lean	0	20
Bacon, lean	0	16
Bacon, fat	0	10
Fish: Halibut, lake trout, perch, whitefish	0	18
Fish: Salmon, fresh or canned....	0	22
Lard, olive oil, crisco.....	0	0

Weigh foods before cooking

and 100 gm. of fat, which could be made of the following milk, cream, and egg-albumin mixture:

500 c.c. ($16\frac{2}{3}$ ounces) 20 per cent cream.

300 c.c. (10 ounces) skimmed milk.

Whites of 4 eggs.

If such a mixture is used at first, it should be substituted by other foods as soon as food scales are available and the use of food tables has been mastered.

Insulin is started in 3 unit doses before breakfast, a careful watch being maintained for symptoms of shock. The dosage is gradually increased 3 units at a time until acidosis is thoroughly controlled and the sugar in the single specimen taken between 7:00 and 9:00 p.m. is reduced to a trace (green precipitate filling the tube in Benedict's qualitative test for glucose in the urine). When more than 10 units are necessary each day, we have been dividing the dose and giving one half before breakfast and the balance immediately after the noon meal.

THE TREATMENT OF INFECTIONS

When a diabetic patient catches a bad cold, or develops bronchitis, pneumonia, furunculosis, or any of the infections, his diabetes at once assumes a greatly increased severity. The effect of bacterial toxins seems to be to neutralize in part the action of the internal secretion of the pancreas and, sugar failing to oxidize, the fats burn incompletely and the acetone bodies put in their appearance. Before the discovery of insulin, such complications often meant death in diabetic coma, but fortunately today the situation is different; such coma deaths have become avoidable and are, therefore, inexcusable. Up to June 1, 1923, we have treated with insulin thirty-four patients with severe infection of one kind or another, and while three patients were lost, one with pneumonia, one with carbuncle, and one with pyelonephritis, they died from toxemia, the urine and blood being free from acetone and diacetic acid.

When infection complicates diabetes, it adds greatly to the difficulty of management. Often the patient is too sick to eat and, therefore, it is hard to know how much insulin he will tolerate. Furthermore, the necessary dose of insulin may be large even if the patient is eating little or nothing. We are satisfied that in uncomplicated cases of diabetes, on proper diets, one unit of insulin results in the metabolism of about 1.7 gm. of sugar. However, in the presence of complications, and par-

ticularly with bacterial infection, the potency of the unit may be appreciably less than this, fluctuating from day to day with the degree of toxemia. We have made it a rule, therefore, in such cases to leave a small amount of sugar in the patient's urine so that we may be assured that the blood sugar is high enough to buffer improperly chosen insulin doses. Attention is centered on the control of acidosis. The diet is planned to consist of soft foods which the sick man can eat: fruit juices, milk, cream, eggs, soft cereals, and possibly a little toast, allowing 1 gm. of carbohydrate, 1 gm. of protein, and from 1 to 2.5 gm. of fat for each kilogram of weight. Doses of from 10 to 20 units of insulin are injected at 8:00 a.m., 12:00 m., 4:00 p.m., and 8:00 p.m. The urine is examined repeatedly, and every specimen passed is tested for diacetic acid. Positive diacetic acid reactions are indications for increasing the doses of insulin, negative reactions are indications for omitting an injection, or at least reducing the size of the next dose. When evening injections are used, the patients must be closely watched at night for symptoms of insulin shock.

THE TREATMENT OF DIABETIC ACIDOSIS AND COMA

Up to June 1, 1923, we had ten cases of coma or near coma in which insulin was used. All but one patient recovered. This is a rather better average result than has been obtained in other clinics, and is probably to be explained by the fact that we do not see as large a proportion of the very severe cases of deep coma as do those who are located in denser centers of population. Nevertheless, we have had some patients in very deep coma with high blood fats and very low alkali reserves. The patient who died expired from acute heart failure twenty minutes after receiving 20 units of insulin. Our procedure in this emergency has been formulated by Barborka in the following set of rules:

1. Immediate and absolute rest in bed under constant supervision of special nurses.
2. Artificial warming with blankets and hot water bottles.
3. Lavage of the stomach with warm 5 per cent solutions of sodium bicarbonate.
4. Lavage of the lower bowel by an enema of warm soapsuds.
5. Catheterization of the urinary bladder.
6. The administration of fluids: by mouth, hot clear coffee, fat-free bouillon, hot water; by rectum, warm physiologic saline as a retention enema.

Adults receive one quart of fluid every six hours; children, one half this amount.

7. Support of the heart by digitalis; hypodermic injections of digifolin, 1 c.c. every hour for three or four doses.

8. Administration of insulin, 30 units subcutaneously at once, buffered with 150 gm. of orange juice by mouth. After three hours, another 150 gm. of orange juice are given. This dose of insulin and the orange juice are repeated every six hours until the urine is free from diacetic acid.

In case the patient is unable to swallow, 15 gm. of glucose in 5 per cent solution are given every three hours by retention enema. In extreme conditions larger doses of insulin may be used, and intravenous injections employed as recommended by Campbell, and others. These injections are accompanied by the intravenous injection of glucose of greatest purity, 1 gm. of glucose for each unit of insulin. Twenty per cent glucose solutions prepared with pure freshly distilled water may be used for such injections.

Joslin and others recommend the prompt subcutaneous injection of 1 liter of physiologic saline solution in these emergencies. Woodyatt advises giving sodium bicarbonate by mouth and by retention enema. We have seldom found it necessary to use alkalis since we have had insulin, but are convinced of its value when insulin is not available.

It is of the greatest assistance to have frequent observations of the blood sugar and the carbon dioxide capacity of the blood in cases of severe acidosis. Nevertheless, one can do without such examinations by noting carefully the acetone odor of the breath and examining each single specimen of urine for diacetic acid. Unless urination is unimpeded, the bladder should be catheterized from time to time. Insulin is administered in increasing doses until the odor of acetone can no longer be detected on the breath, or until the diacetic acid reaction of the urine is negative. After the patient has recovered from acidosis, his treatment can be continued according to the routine described above.

SUMMARY

I have outlined a method for planning diabetic diets and treating patients with insulin which is in accord with recent advances and approved practices, and yet is simple enough to be immediately available to the busy practitioner whose equipment for laboratory control is minimal. More precise methods are desirable in institutions and for spe-

cialists, but the majority of patients with diabetes will never be able to consult the specialist, and the home physician must be prepared to treat them to the best of his ability. The indispensable equipment includes a good food balance, a table of food values, Benedict's or Haines' solution for qualitative determination of urinary sugar, and a 10 per cent ferric chlorid solution for determination of diacetic acid in the urine.

Treatment can be started with simple milk, cream, and egg-albumin mixtures, the formulas for which are given, but for the subsequent conduct of the case the physician must familiarize himself with the use of food tables and the planning of diets of known composition. Also he must so train his patient that the latter will be able to continue an accurate diet, make his insulin injections properly, and test his urine for sugar and diacetic acid. The instruction of the patient in these matters is vital, and the treatment of a case of diabetes is not completed until this has been accomplished. Insulin is not a cure for the underlying pancreatic fault, but it does enable the well-trained diabetic to maintain normal bodily and mental vigor.

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THE SYMPTOMS AND SIGNS OF ACUTE LOBAR PNEUMONIA*

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St. Paul

The diagnosis of acute lobar pneumonia usually presents no difficulties; yet in certain instances it is difficult or impossible.

From the standpoint of symptoms, there are two important types of this disease: (1) the sthenic, (2) the asthenic (senile, complicating, or terminal).

Furthermore one must consider with relation to physical signs: (1) the common form of frank development; (2) the so-called "massive pneumonia" with blocking of the larger bronchi, temporary or persisting; (3) the variety characterized by gradual development from the hilum to the periphery, i.e., central pneumonia.

The Onset.—In its typical form acute lobar pneumonia comes on abruptly with few or no prodromal symptoms and is initiated by decided chilliness or rigor, single or repeated, varying in duration from a few minutes to several hours. In 40 per cent or more of the cases, however, a definite chill or even a period of chilliness is lacking and fever with or without pain in the chest is the first definite symptom. Furthermore, though usually trifling or absent, prodromal symptoms may be present for several days, and, of these, the commonest are coryza and bronchitis, sore throat, tonsillitis, muscle and joint pains and anorexia.

In the asthenic type of pneumonia no symptoms of abrupt onset or marked character occur and the disease often escapes detection.

Pain.—One of the earliest and most constant symptoms (90 per cent) of the sthenic type is pain in the chest, obviously pleural in origin, frequently showing diaphragmatic involvement and preceding by hours any chill or marked rise in temperature. Hence the frequent, referred, abdominal pain and tenderness in either the upper or lower abdominal segments, associated oftentimes with muscle-rigidity, which has led to many a mistaken abdominal section. A like pain may occur in the neck and arms.

Pain in this disease may influence posture, leading the patient sometimes to lie on the side affected instead of assuming that dorsal recumbency usually

elected, and forces the patient to suppress his cough, breathe superficially and seek to avoid yawning, laughing or sneezing.

In the asthenic and centrally developing types, this notable feature of the clinical picture may be wholly lacking.

It should be noted that a sudden rather than gradual disappearance of pain suggests the occurrence of pleural effusion.

Fever.—The "cold" stage of pneumonia is succeeded rapidly by one that is "hot," subjectively and objectively, the body temperature rising rapidly to 103° to 104° or 105° F., with all of the accompanying symptoms of high fever, including headache, which is peculiarly constant in cases of the sthenic type and often severe and troublesome.

The fever persists ordinarily until crisis in a continuous form appears, with diurnal variations which seldom exceed one degree Fahrenheit.

In certain cases, however, the fever is strikingly remittent throughout. In asthenic (senile, terminal) pneumonia it may be wholly absent or trivial, but, sometimes, is the most outstanding symptom of an obscure clinical picture.

The primary rise may be gradual, not abrupt or rapid, and forty-eight or even seventy-two hours may elapse before it is fully established.

An abrupt rise may occur during the active stage and may be without clinical significance or it may indicate the involvement of another lobe, the onset of a complication, or the imminence of crisis.

An abrupt fall characterizes the onset of crisis; but it must be remembered that this rapid drop in temperature, if of favorable significance, should be associated with a marked, decided and obvious betterment of the general condition of the patient. This being absent, the fall of the fever must be considered as a danger signal accompanying or portending collapse, and some serious complication should be suspected and sought.

The duration of the acute febrile period varies from twenty-four hours to two weeks or more—crisis or lysis beginning most commonly between the fifth and eighth day of the disease. The old idea that the crisis falls upon the odd-numbered days of the disease is a fallacy.

When crisis is postponed for twelve days or more, termination by lysis usually occurs.

A sudden drop in temperature, followed by a rise and unassociated with symptoms of collapse, is termed a pseudo-crisis and may precede the

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critical fall by a period varying from a few hours to three days. It occurs in about 10 per cent of all cases.

Respiration.—Hurried, shallow and obviously painful breathing is the typical finding in sthenic cases, but is less evident in those of the asthenic or centrally developing type in which the respiratory rate may be but slightly affected and all signs of distress absent.

The normal pulse—respiration ratio of $4\frac{1}{2}$ to 1—may in the common type of lobar pneumonia be converted into 3 to 1, or even 2 to 1, as the respiratory rate rises to thirty, forty, or even sixty or more to the minute—the first figures being the usual ones.

A sharp distinction must be drawn between hurried breathing, painful or not, and actual dyspnea. The latter is a serious symptom indicative, in most instances, of extreme cardiac weakness or the presence of a large pleural effusion. Due allowance must be made for extreme nervousness which may cause a false dyspnea.

The painful breathing of the initial stages usually subsides gradually within a period varying from a few hours to three days, but with persisting consolidation the rate remains rapid. Pleural friction may or may not be detected. Excessively rapid respiration, sixty or seventy to the minute, is a grave sign, though recovery may occur. Expiratory grunting is very common and quite significant and characteristic.

The Pulse.—Small, hard and rapid during the stage of rigor or decided chilliness (if these symptoms be present), the pulse becomes full and bounding with the rising temperature, attaining a rate of from 90 to 110 in the ordinary case.

The onset during the active stage of a pulse excessively slow, irregular or extremely rapid, is ominous, and decided weakening, especially if associated with deepening cyanosis, is one of the gravest symptoms encountered in this disease. Any case showing a pulse rate at or above 130 is to be regarded as a grave one; with rate 140 or above the prognosis is bad.

Blood Pressure.—The blood pressure ordinarily is that of the individual in a state of health. Gibson's dictum as to the gravity of the case which shows a systolic reading lower than the pulse beats per minute is in general correct, for obviously an extremely high pulse rate 140+ or a very low sys-

tolic pressure are in themselves serious symptoms. A sudden drop in the systolic pressure is ominous.

Cough and Sputum.—The cough at the onset dry, harassing and unproductive, at times paroxysmal, painful and exhausting, is voluntarily suppressed as much as possible.

The sputum is scant, mucoid, and usually streaked with blood.

As the disease progresses, the cough becomes ordinarily less urgent, and the sputum, rusty from the diffusion of altered blood pigment, is peculiarly viscid and tenacious, sticking to the side of the sputum cup inverted and tending to cling to the lips of the harassed patient. The sputum may be frankly bloody (in which case one thinks especially of the possibility of pneumonic phthisis) or prune-juice like, which suggests the presence of pulmonary edema. With the onset of resolution the cough is eased and the creamy mucopurulent sputum is easily raised and ejected.

Sudden relief of cough in the early stages always suggests the oncoming of a complicating pleural effusion.

It must be remembered that cough and sputum may be wholly absent in senile, complicating or terminal pneumonias of the asthenic type.

Outward appearance of the patient.—In the sthenic type of pneumonia the face of the victim is pallid and cyanotic if seen during a rigor, flushed, if fever has come on. As the process in the lung develops the cheek corresponding to the affected side may show a deeper flush than its fellow.

The eyes are bright, the expression anxious. Labial, nasal, facial or even anal herpes may appear—the patient appears sick and distressed, but the decubitus is active whether, as is usual, it be dorsal or, by reason of chest pain, lateral.

These signs one and all may be absent in asthenic cases.

Headache, anorexia, and flatulence are common, and meteorism, if excessive, may add greatly to the gravity of the case and seriously affect the already toxic and over-burdened heart.

Hiccough, when present persistently, calls for immediate relief by hyoscin-hydrobromide and morphine, as it constitutes one of the most fatal of the occasional complications of acute lobar pneumonia.

The Blood.—During the acute phases no anemia is detectable; but after resolution is completed a reduction of about 10 per cent in red cells and a

somewhat greater loss of hemoglobin may be determined.

The presence of a leucocytosis in which the polymorphonuclear cell constitutes 80 per cent plus of the white count is one of the earliest, most dependable, and most valuable confirmatory signs of acute lobar pneumonia. The "polymorph" increase appears within a few hours after the onset and falls gradually to normal during resolution—more slowly if the termination is by lysis rather than crisis.

If the anticipated progressive drop does not appear, a complication must be suspected, empyema being that most commonly found.

If, however, though the white count remains high, the polymorph predominance in the count is vitiated by an increase of lymphocytes and eosinophiles it is probable that delayed resolution is accountable.

Normal counts occur sometimes with mild infection, but, in general, a low count or a very high one means danger. Counts running between 20,000 and 30,000 seem to be most favorable. Counts of 40,000 are not rare nor especially unfavorable in sthenic individuals and counts as high as 100,000, with recovery, are reported. A gradual rise in the count as the disease progresses is a favorable sign.

In the asthenic types a leucocytosis may be present and of great value and significance. Unfortunately, however, a considerable percentage of these show a leucopenia or normal count.

In central pneumonias a high leucocyte count is a valuable corroborative symptom when present.

During the stage of resolution, nucleated red cells and myelocytes may be found in the blood, but are of no special importance or significance.

Blood Cultures.—Whenever possible a blood culture should be had and it should be remembered that pneumonococcus bacteremia is of serious import, such cases showing a mortality rate reaching or exceeding 50 per cent.

Sputum cultures should also be made, but only from such sputa as come from the deeper air passages. The establishment of the type of pneumococcus present has an important bearing upon both prognosis and treatment.

The Urine.—The urine is scant, high-colored, contains usually a trace of albumin and an occasional hyaline or finely granular cast and in a certain percentage of cases a substance which gives a

precipitin reaction with the antiserum specific for the given case.

A very important and valuable though neglected sign is the striking diminution or total absence of urinary chlorides. A very simple test suffices for the determination of their absence or diminution.

Physical Signs.—The facies, the character of the breathing and the posture have been described.

Early in the disease the only decided limitation of respiratory movement of the chest will be that attributable to pain. Later, as consolidation develops, limitation of respiratory excursion may be marked over the area of consolidation but not necessarily over the whole of the affected side if a lower lobe only is involved, as in that case the movements of the upper chest on the affected side may be exaggerated.

Palpation confirms inspection with respect to abnormalities of chest movement and is the more dependable method.

In very rapidly developing consolidation, increased tactile fremitus may be detected within twelve to twenty-four hours; within these periods usually, however, there is little change.

Percussion reveals at the outset nothing whatever. A few hours later the note may be hyperresonant over the area of lung affected, this being gradually replaced by dullness, usually pronounced and associated with a marked sensation of resistance.

Dullness persists at and after crisis until resolution is well under way and the return of normal resonance is delayed ordinarily for a week or more though the change from marked dullness to relative resonance may be apparent in twenty-four, forty-eight or seventy-two hours, or even a less time.

In three cases observed by your essayist during an influenza epidemic frank and complete consolidation of an apex appeared and wholly disappeared within twenty-four hours. Each of the three cases was associated with chill, high fever and a bloody dysentery of but a few hours' duration. Chest pain, cough and sputa were absent.

Hyperresonance is quite commonly observed over the unaffected lobes of the pneumonic lung and along the line of advance of consolidation.

Auscultation.—During the first few hours of the attack a significant suppression of the breath sounds over the affected area is commonly encountered and is of great significance. In other cases the sounds may be harsh or distinctly broncho-vesicular. It is

in this stage that one may hear at the end of forced inspiration, and then only, the crepitant râle—a dry, high pitched, extremely fine delicate crackle, occurring usually in showers. Unlike the crepitant râle of atelectasis it persists after repeated forced respirations and ordinarily is heard only unilaterally, save in those instances where two corresponding lower lobes are involved simultaneously. It disappears when full consolidation of the lobe affected is achieved and is heard therefore only during a period varying from a few hours to one or two days, until resolution commences, when it may reappear as the *crepitatio redux* together with subcrepitant and other coarser râles.

When the stage of actual consolidation is reached, the breath sounds are typical and unmistakable. Both inspiration and expiration are tubular, i.e., high pitched, intense, and equal in duration. Bronchophony, pectoriloquy and sometimes egophony are present and tactile fremitus is markedly increased. Careful auscultation of the upper axillary spaces must never be omitted and it must be remembered that the first significant signs in an obscure case may be audible only at the inferior angle of the scapula or the apex of the axillary space.

Auscultation of the heart is extremely important. The second pulmonary sound should be markedly loud and exaggerated, the first sound at the apex clear, the aortic second well defined.

Only the short duration of acute lobar pneumonia and the happy tendency to infection by pneumococcus types of lesser virulence save the heart in most, but by no means all, recoverable cases, from serious damage or permanent, long-continued weakness. The frequency of involvement in fatal cases will be dealt with later. Both by physical obstacles and by toxemia its muscle is seriously hampered and threatened. Dilatation is a common event and this is particularly true of the right heart.

In cases watched and guided carelessly in convalescence persisting dilatation and varying degrees of myocardial insufficiency may be present for weeks or months.

A lack of pronounced accentuation of the second pulmonary tone, or progressive diminution of its intensity, are warning signals of acute extreme dilatation. A lessening of the first tone at the apex suggests a weakening of the heart as a whole, its tones being markedly affected by the high grade toxemia characteristic of the disease.

So-called functional murmurs are of similar sig-

nificance, indicating tonus deficiency, and are very common in severe or prolonged attacks.

Endocarditis and pericarditis are not uncommon and the fact that when a true endocarditis develops in lobar pneumonia it is often of the malignant ulcerative type must be held in mind.

Endocarditis is found in about 15 per cent and pericarditis in 12 per cent of fatal cases coming to autopsy, but is often overlooked during the attack.

Cardiac failure may occur early, more often during the height of the attack, not infrequently at the time of crisis (especially in cases of arrested tuberculosis), and occasionally in convalescence, when as a rule too little care is taken to safeguard the patient.

A pulse above 130 during the acute attack, a low or falling blood pressure, arrhythmia, deepening cyanosis, subjective weakness or exhaustion, increasing pallor, progressive or abruptly established dyspnea and cooling or cold extremities are ominous signs.

As a matter of fact the condition of the heart is a vital factor in the outcome of a case of acute lobar pneumonia and it must be watched closely from onset to the end of convalescence.

Furthermore the utmost care should be taken to conserve heart strength during the attack and to avoid pushing the patient ahead too rapidly after the crisis has occurred and resolution is under way.

It is not only unwise but wholly unnecessary to raise up the patient while making the physical examination of the chest—yet this dangerous error is constantly committed.

The pneumonia patient should not be permitted to sit up for any purpose during the acute stage or at and immediately after the crisis.

If delirium is present the patient must never be left alone for a moment, lest he leap out of bed and subject a weak heart to fatal overstrain.

The condition of the heart sounds should be determined at every visit and from start to finish and from visit to visit the attending physician should record as accurately as possible in the individual case the position and character of the apex beat (point of maximum impulse) and the right and left borders of the heart.

During and after convalescence thorough and painstaking examinations are imperatively demanded.

Asthenic, senile, complicating and alcoholic pneumonias.—In these we deal with what is at best

in many instances only a fragmentary clinical picture. Practically all important localizing and definitive symptoms may be absent and one's chief reliance must be placed upon the knowledge of the frequency of lobar pneumonia as a cause of exitus in individuals coming under these heads and seek by thorough and comprehensive methods to establish its presence.

Even though the evidence is fragmentary the nature of such shreds of testimony as may be obtained is usually sufficient when combined to yield reasonable proof of the nature of the ailment.

Massive Pneumonia.—This condition, fortunately rare, offers less difficulty in diagnosis than might at first thought be assumed. Of all the signs of pneumonia it lacks only those typical of consolidation with open bronchi. The absence of pleural effusion is determined readily by the needle and the diagnosis doubtless is missed less frequently than is that of central pneumonia.

In certain cases of pseudo-massive pneumonia a few coughs will remove blocking secretion and establish the classical auscultatory signs.

Central Pneumonia.—In the ordinary form this presents the usual symptoms of acute lobar pneumonia, but for several days lacks the physical signs. Indeed, in some instances resolution appears before the consolidation reaches the surface of the lung. The diagnosis is not difficult if the collective symptoms apart from the physical signs are outstanding, as is often the case.

In closing I wish to say that the chief factors in the accurate diagnosis of obscure lobar pneumonia are: first, a due appreciation of its frequent departures from the classical picture; second, its frequency as a masked form in old age, chronic exhausting disease, alcoholism and as a complication of other acute infections; and, third, a thorough and painstaking examination which includes a white blood count and the simple and readily achieved determination of the urinary chlorides.

TREATMENT OF PNEUMONIA*

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We have used our five senses more or less in the diagnosis of our case. Now in treatment let us make use of the sixth sense, the one we as physicians

should develop more and more, "common sense." How wonderful it would be if for pneumonia, a specific disease, we had a specific remedy which we could employ with the same confidence, benefit and assurance of results that we do antitoxin in diphtheria. For twenty-five years the work in this line has been going on and on, and that, up to date, it has not produced anything absolutely definite and reliable is proven by the still continued efforts of the research and experimental laboratories and its co-workers, bringing out something new every now and then for trial. In the December, 1922, number of the American Journal of Medical Sciences, for instance, a paper is published by Dr. Lewis Connor of New York on a serum-free solution of pneumococcus antibodies as tried out by him and his assistants in the New York Hospital. Again, according to the Annual Reports of the United States Public Health Service for 1921-1922, it appears that in the laboratories connected with Bellevue Hospital, New York City, a group working under the direction of Dr. Russell L. Cecil, special expert, have continued attempts to produce effective vaccines and serums, and have attacked the mechanism of infection. This is a continuing research, and the useful results, if any, that may be had from it cannot be predicted; so we are still at a loss what to use. What has stood the test of time and will prove of benefit? Should we favor or use the pneumonia antitoxin, the vaccines, the bacterins, antigens, serums, serum-free solution of antibodies? A number of well known clinicians seem to be inclined to think that serum in Type I cases gives some benefit. On a recent visit to the eastern hospitals I heard the statement made by one of the chief clinicians in Boston in regard to serum treatment for Type I cases of pneumonia that they had found at the Boston City Hospital the mortality about the same, serum or no serum. If there was any noticeable disadvantage, it was more with the cases who received serum. While in New York the use of pneumonia antibodies solution given subcutaneously in amounts as high as 1,200 c.c. seemed to be the favorite method of specific treatment. A letter of inquiry in regard to the use of antitoxins, antigens, bacterins, etc., sent to a friend and brother practitioner, Dr. Kenneth Taylor, now of New York, brought the following reply:

"You asked me about the treatment of pneumonia in New York. I do not think any of the hospitals are making consistent use of antitoxins or antigens or bacterins. There are a few men who are trying them on selected cases, but

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there is no general acceptance of their value. In fact, I think there is less interest in them now than there was four or five years ago. After all, I do not believe there is anything of a medical sort which has particular value in pneumonia except digitalis. In my own service last year at the hospital, we gave tincture of digitalis in two-dram doses, repeated every four hours for four or six doses, as soon as the case appeared. Occasionally, to very sick patients with signs of beginning heart weakness, we gave eight or ten drops of the tincture intravenously. It was certainly very effective at times in steadying a shaky heart. In fact, the reaction was often so prompt that I have a feeling that it was the alcohol in the tincture, rather than the digitalis, which was effective."

Hearst's International Monthly Magazine, January, 1923, contained an exposé of Dr. Abrams, the well known or rather well advertised San Francisco blood expert (?) or whatever you want to call him. The question was, "Why do doctors fall for such stuff?" The author says the medical profession, like any other, has its lunatic fringe, ready to swallow without criticism any bizarre idea so long as it is new. Let us keep away as much as possible from the fringe. We all or rather most of us know and sadly remember how we have fallen for gold and silver mining stock and are still waiting for oil to spout to make us millionaires, fruit lands to reach \$400 to \$600 an acre, to take care of us in our old age, and so forth. Here, at least, we have not done any harm to our patients, but let us be careful not to use new remedies which may, to our chagrin, cost a life every now and then. Personally I shall wait before employing the newer methods until I am convinced beyond doubt that with them I can do better than with the old ones. Still being one of the younger practitioners, I hope that I may see the day when bacteriologists or biochemists will succeed in producing a remedy which will give us better results in the treatment of pneumonia than we have to date.

At the present time how do I care for my pneumonia patients? First I remember that every now and then I see several cases in one and the same family, following each other within a short time; for the disease is infectious and transmissible. As a prophylactic measure I warn the family not to be around the ill one any more than is absolutely necessary; while in the sick-room to refrain from talking much—the tighter they keep the mouth shut the less chance of swallowing germs, and, most important, the more rest for the patient. They are instructed to see that the sputum, laundry, and excretions are properly handled and disinfected. Re-

garding prophylaxis, it must not be forgotten by the surgeon that he can reduce his ether pneumonias by shortening as much as possible the duration of the anesthetic and substituting local anesthesia where possible, particularly when patients have colds, cough, diseased tonsils or infected sinuses. What about prophylactic inoculation at this time? Allow me to refer you to an extensive report by McCoy and Hasseltine of the United States Public Health Service and August Wadsworth (Am. Med. Assn. Journal, Sept., 1922) of experiments made in New York State Institutions representing a population of 38,958 inmates. In summing up their study, they state that the results are far from satisfactory and do not permit the drawing of any definite conclusions; they show that a large number if not an equal number of cases of pneumonia developed after inoculation. Furthermore they show the development in the inoculated group of pneumonias produced by the three types of pneumococcus used in the vaccine (the lipo-vaccine prepared at the Army Medical School in Washington, D. C.).

After all, our efforts are directed to simply assist our pneumonia patient in his fight against the disease, paying particular attention to sustain as much as possible the integrity and strength of his heart muscle and to relieve as much as possible his toxemia until the crisis has passed. To do this he must be put at rest, absolute rest, physical as well as mental, and this is best procured by putting him under the care of a competent nurse. If he does not like his nurse and cannot get along with her do not hesitate to change, get another one who may prove more congenial to him; listen to his complaints, don't pass them over lightly by thinking he is a crank and hard to get along with—nurses are human beings and not infallible. Put him in the most cheerful room, the one which gets the most sunlight, with enough windows to assure a continuous and abundant supply of fresh air; as oxygenation of the blood is very much interfered with, not only on account of the consolidated pulmonary area but also on account of the shallow breathing, the air must be abundant and fresh. The temperature of the room should be between 60 to 65 degrees F. (for the very young and older 70 degrees), but use "common sense"; if pneumonia patients are put out of doors in Florida or California or here during the summer, there is no reason why we should try the same procedure here in Minnesota

during this time of the year or during at least seven months of the year. I have often thought that if I ever had pneumonia and a well meaning brother practitioner should put me out in the cold, I would like to reciprocate in the opposite direction and see him where it is said to be extremely hot. You can get plenty of fresh air in cold weather through one window. Keep your patient warm and comfortable, and don't let him get chilled. One of the thrills of my young life I received when I read an article by our friend and neighbor Dr. George D. Head, of Minneapolis, on Treatment of Pneumonia at Camp Wheeler (published in the Journal of the Am. Med. Assn. 1919). Just to illustrate the fresh air treatment without common sense compared with the one instituted by him with good common sense behind it, I cannot refrain from presenting a short abstract of his report.

The epidemic occurred at Camp Wheeler during October, November, December and part of January, 1919. From October 5th to November 18th open air or open ward treatment was ordered with everything wide open, rain or shine, cold or not, with no screens or blankets before the windows or doors. The soldiers were told to keep their heads close to the open windows so that the cold air sweeping in would be breathed in; if he complained of the draft and cold he was told the fresh air would make him well; no cotton jackets or chest protectors were used and the ward fires were allowed to go out at night; the result of this treatment showed a mortality of 13.6 per cent. While the epidemic was at its height, Dr. Head came and instituted the following radical change in treatment: All windows and doors in the wards were closed, or according to weather or temperature partially closed, and the patients guarded in every way from drafts of cold air, chilling or exposure. All soldiers sick with pneumonia, on outside porches, were ordered moved into wards where they could be kept warm and comfortable; every one was provided with a cotton jacket to keep the chest warm and protect it from drafts and cold air; attendants were warned not to chill their patients while taking care of them—they were kept well covered and tucked in. Fires were kept going day and night, special nurses were provided for the very sick, bathing was allowed only when the wards were warm, and physical examination carried out as quickly and infrequently as permissible—result, mortality 3.2 per cent. Fresh air is the *sine qua non*, but give it so that your patient appreciates it,

enjoys it and is comforted by it, and so that the nurse, instead of taking care of him with cold hands, herself shivering in a sweater, can attend him in comfort.

"Raise the darkened windows, open wide the door, let the blessed sunshine in." It is wonderful to contemplate the advance made in our educational system. Little tots just able to attend kindergarten are early taught the first important principle in treatment of pneumonia and return reciting the above sentence to their families.

Next, be and have others be as cheerful as possible with the patient; mysterious whisperings, a long face, shaking of the head, turning of the eyes upwards as if already watching his flight towards heaven, or telling him "you are awfully sick, old boy, but we may pull you through," is uncalled for in the sick room. You don't need to use the exact French formula so popular at present time, but you can produce one of your own and encourage him, cheer him up, make him feel that you are much interested in him as if he was one of your own family and that he is going to get well; it will help him to take a new lease on life.

The question of food is very important too. It should be almost entirely liquid, consisting of egg-nog, cocoa, buttermilk, tea, orangeade, orange juice with albumen, plenty of water, broths, ice cream, Jello, soups, and, later, soft food. Some years ago late in the evening my telephone rang and, answering, somebody inquired, "What food shall I give my husband?" I replied, "Soft food," and was asked, "What do you mean by soft food? We have soft dill pickles, herring that melts in your mouth, cheese so soft you couldn't chew it if you wanted to, and a lot of other soft stuff." I knew the party very well and she taught me a good lesson, namely, to be more specific when giving orders. Soft food includes milk toast, coddled eggs, vegetable purée, scraped meat (chicken, squab), stewed fruits, well cooked gruels; all should be given in small amounts but frequently. A successful enema and a drastic dose of calomel followed by a dose of magnesium citrate to begin with and continuous attention to free elimination to avoid toxemia as much as possible, is all that is needed in an ordinary mild case of pneumonia. If the toxemia is progressive and increasing, order plenty of water with addition of the acetate, bicarbonate and citrate of potassium to increase diuresis. An entero- and hypodermoclysis of normal salt solution or the intravenous admini-

stration of 250 c.c. of 10 per cent glucose will assist elimination in accordance with common sense. I again emphasize this because I remember while I was intern in a large middle west hospital, we had a case of tapeworm, or rather a man with a tapeworm. You know how we usually eliminate or try to eliminate this long and true friend. We eliminated so lively that we got him head and all, or rather all and head (usually the latter comes last), but as a result of this splendid elimination the patient developed a gastroenteritis and was himself eliminated—"the operation was a success but the patient died," in the parlance of our surgical confrères.

Unfortunately, many pneumonias are not of a mild character and run a more severe course. In these cases how can we prevent myocardial failure, besides giving the patient the already mentioned benefit of proper hygienic conditions? My standby is still digitalis. It does not make so much difference what preparation you use, if you use one of the standard preparations put out by a reliable pharmaceutical laboratory. At times you will have to reinforce or change to other cardiac or respiratory stimulants, such as atropin, alcohol, camphor in oil, nitroglycerin, strychnine, epinephrin, strophanthus and caffein, according to indications. Do not forget that venesection in the plethoric, robust individual with high blood pressure and bounding pulse and tendency to right heart failure will often relieve the dyspnea. Eight to 16 ounces may be withdrawn at one time.

Alcohol in the form of whiskey or brandy, or a wine like Tokay in one-half ounce doses every three hours, or oftener, is an excellent cardiac stimulant, very much appreciated as a rule by our male patients and shunned by very few of our female patients. It can be administered in different ways, cool or warm, or flavored with orange, lemon or lime juice. Some of you who don't believe in prescribing alcoholics, can relieve your consciences by dispensing or causing to be dispensed to your patients such innocent compounds or mixtures as Elixir Simplex which contains only 33 per cent alcohol or that beautiful reddish pink Elixir Lactopapsin 13 per cent (you know tincture Digitalis contains 70 per cent alcohol), Elixir I. Q. S. 20 per cent, Elixir Heroin cum Turpin Hydrate about 45 per cent, or Essence Pepsin 15 per cent.

A favorite prescription of mine, in this connection, for patients (not for me personally) is:

Spirits Ammonia Aromaticus	..1/2 drachm
Spirits Frumenti	.....1/2 to 1 ounce
Syrup Tolu	.....1 drachm
Aquæ	.....2 ounces

Of course everybody knows that alcoholics need larger doses of alcohol and should not be deprived of it.

Pain, so often the initial symptom and at times very severe, must be relieved by opiates, preferably hypodermics of morphin, codein, or pantopon hydrochloride in proper dosage and repeated if necessary. The old time mustard and flaxseed poultice feels at times very agreeable, and keeps the family interested in doing something. An ice-bag applied locally is of value.

Fever will as a rule take care of itself. A temperature of 104 degrees while appearing ominous to the relatives I am rather pleased to observe in the beginning of the illness. This, with a high leucocyte count, indicates to me a good reaction, or shall I call it fighting condition? If the temperature persists we must rely on hydro-therapeutic measures, applied with common sense. An ice-bag to the head, an occasional tepid sponge, or an abdominal pack is called for. If you feel like using an antipyretic drug, a large dose of quinine gr. xv to xx repeated in six to eight hours, is much preferable to the depressing coal-tar products.

Excessive cough, often so exhausting and rest disturbing, can be relieved or ameliorated by sedatives and expectorants.

Edema of the lungs calls for venesection in suitable cases and the use of atropin or oxygen. Sleeplessness, insomnia and extreme restlessness you may relieve by small doses of chloral or adalin or veronal, repeated as required. Complications as pleuritis, endo- and pericarditis, meningitis, nephritis, otitis media, parotitis, infection of the alimentary tract (jaundice), phlebitis, neuritis, must be dealt with in the usual manner.

Watch your patient closely during convalescence. I try to keep him extra warm after the crisis, keep him at least a week in bed after his crisis, longer if there are signs or symptoms that his heart is still feeble. Although a remission of the pulse after the crisis is not to be feared and not a particular danger sign, be sure that he does not get around with any cardiac impairment. Teach him how to take proper breathing exercises and examine his urine occasionally or frequently. If your case on the ninth or eleventh day or any day has had what appeared

to be a crisis, but dullness remains longer than usual or increases after a number of days or a low grade fever remains or returns, if there is continuous loss of appetite, a short unproductive irritable cough, even if physical signs are not absolutely convincing of an accumulation of fluid in the pleural cavity use your hypodermic or aspirating syringe with a fair sized caliber needle and do a trial puncture of the pleural cavity. If negative, repeat at a different level and you will not be so liable to overlook an empyema which if present should be drained. If you have access to the use of an x-ray laboratory make use of it and it too may help to localize a circumscribed empyema or lung abscess which may need surgical interference.

Remember, also, there is such a thing as pneumococcic arthritis, at times suppurative, as well as a pneumococcic peritonitis even without any lung involvement.

Prognosis.—Pneumonia ranks first of all acute diseases as a cause of death in civilized countries. It is said that over one million people die each year from this disease alone. Osler called it the friend of the aged, who through its aid escape the cold gradation of decay; yet more persons die from it between the ages of thirty-five and fifty-five than at any other period. You all remember patients and friends, hard working business and professional men who have been taken off by it before they really could enjoy the fruits of their labor.

The average mortality being 18 to 25 per cent, it has quite a high mortality rate in infants. A very low mortality in children, who generally recover, about a 13 per cent mortality between the ages of twenty to thirty years, it gradually increases to 57 per cent between the ages of sixty to eighty years, in the later years being 80 per cent.

That the rate varies under the influence of different factors and conditions is natural: in individuals weakened by previous disease or insufficient food, and in the very stout it is distinctly more fatal. This is true also for complicating alcoholism, diabetes, endocarditis, myocarditis, arteriosclerosis, influenza, etc.

The prognostication bearing on the individual case must take into consideration not only the resisting power of the patient but also the virulence of the infection. We know that as in other acute infections, we encounter epidemics of unusual violence as well as milder ones. The extent of involve-

ment and location bears somewhat on the prognosis. As a rule the pneumonic infection is confined strictly to the lungs, more often in one base of one lung or even involving the whole of one lung; these cases run the most favorable course, while a migrating pneumonic process or double pneumonia affords a much graver prognosis. Pneumonia of the apex is more serious; a persistent high temperature of 105 degrees or more is a danger sign; so is arrhythmia with increasing pulse rate; a weakening of the first sound and lessened intensity of the second sound or entire disappearance of the same signifies insufficiency of the right ventricle; absence of leucocytosis, a rising respiratory rate, a marked prune juice almost grumous expectoration, are unfavorable signs. Meningitis developing during the course of the disease is almost always fatal. Complications such as kidney involvement, severe concurrent gastro-enteritis, marked albuminuria, pneumonic peritonitis or arthritis, endo- and pericarditis, extensive edema of the lungs complicating pleuritic effusion, lung abscess and empyema, all tend to increase the gravity of the prognosis. Death usually occurs from insufficiency of the right ventricle, as a result of the increased demand to maintain the circulation as a result of pulmonary consolidation as well as the action of the toxemia on the myocardium.

The rule of Gibson that when the pulse rate per minute is higher than the blood pressure in millimeters of mercury the equilibrium of the circulation is seriously disturbed and the prognosis less favorable, seems to hold particularly true.

THE SURGICAL COMPLICATIONS OF PNEUMONIA*

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Of complications in pneumonia there are many. While meningitis and encephalitis may require spinal puncture repeatedly, they are hardly to be called surgical complications of pneumonia. Nephritis and icterus could be considered as potential surgical problems. As pneumococcic nephritis involves exclusively the cortex of the kidney, the exudate causing compression of the glomeruli and

*Presented in Symposium on Pneumonia, at St. Paul Clinic Week, January, 1923.

swelling of the cortical parenchyma in general—an extreme case might be benefited by a decapsulation of the kidneys. Icterus in pneumonia must be properly interpreted. It may be due to a duodenitis or other catarrhal swelling of the bile channels in pneumococcic lobar pneumonia, in which case it is not a very grave complication. This is very different from the much dreaded so-called bilious pneumonia, which is not due to the *diplococcus pneumoniae* but to other micro-organisms, which cause a degeneration of the liver parenchyma. This form of pneumonia does therefore not belong to the genuine lobar type, but is to be grouped among the atypical forms. While the first mentioned picture is a simple pneumonia *cum ictero*, the latter is the so frequently fatal pneumonia biliosa. In an extreme case of the former type, bile drainage might come under consideration.

The plainly surgical complications of pneumonia are empyema, suppurating pericarditis, lung abscess, lung necrosis and lung gangrene.

The treatment of empyema, i. e., metapneumonic empyema, has been discussed so much since the war, and is such a large subject that we cannot go into all details in the few minutes allotted to this paper. I will therefore only pick out the most noteworthy improvements in treatment which the World War has produced. Let me state that I consider Mozingo's method** a glorious achievement. While it has been modified in different ways, it will be very hard to improve upon. The place of election is the eighth interpace in the posterior axillary line. First a diagnostic puncture with a fine needle is made to make sure of fluid containing micro-organisms. Then under local anesthesia a trocar is inserted *at once at the same spot* to guard against puncturing the lung. The trocar should not be too sharply pointed, and a half centimeter incision through the skin with a bistoury makes the introduction easy. Mozingo, whom I am following closely in this description, smears the cannula with vaseline. Through the cannula of the trocar a rubber tube, which fits snugly, is inserted. It is about 15 inches long and has from five to ten fenestræ about 3 mm. in diameter, 1 cm. apart. This tube is instantly introduced the moment the trocar is pulled out. Now the cannula is removed over the rubber tube, of which about 10 inches remains external. The fluid is then drawn off by aspiration, which

should be done slowly. Should the respiration become embarrassed, the aspiration stops, and even from 200 to 400 c.c. of Dakin's solution may be injected; but after a while the aspiration can be resumed. If there is high temperature with active pneumonia, normal saline is used for washing instead of Dakin's solution. The end of the tube is kept sterile by rubber covering and held in place by the artery forceps which clamps the tube to maintain negative pressure. "Treatments are usually given every four to six hours by day and once or twice at night, until the pyogenic membrane and fibrinous exudate have been dissolved, a process taking from two to fourteen days." A small amount of Dakin's fluid is left in after each flushing. After the amount of secretion has been greatly reduced (usually in four to ten days) and the smears and cultures are negative or nearly so, Mozingo injects about 5 c.c. of a twenty-four-hour old solution of 2 per cent dilution of liquor formaldehyde in glycerine once daily, which is repeated once daily for three to seven days. At the end of this time the tube is removed and the case simply watched for possible reaccumulation, in which case the tube would have to be reinserted. It is very necessary to be well familiar with the procedure in its details, but the results in the hands of Mozingo were superb.

One of the most valuable features of this modern treatment is the possibility of treating the empyema at the earliest moment, even before the pneumonia has subsided. In fact it has made us more aware of the danger that empyema may often already exist, where the unsuspecting still speaks of irregular lysis or of unresolved pneumonia. The only drawback to the method is the necessity of absolutely competent execution of the procedure, for, at the start, irrigations must be carried out at frequent intervals day and night. Another important new fact learned is that under proper sterilization with Dakin's fluid the fibrinous masses melt down. It is most probable, from our previous knowledge, that this liquefaction is due to the lysins in the serous transudate which follows the evacuation of the pus.

At the meeting of the Western Surgical Association in December, 1922, Doctor W. D. Gatch reported splendid results even in old empyemata which had been opened long before, by irrigation with a double strength Dakin's solution. The thick deposits of the empyema walls thinned down under this treatment and the cavity became sterile and

**The Surgical Treatment of Empyema by a Closed Method. Am. Jour. Med. Sc., May, 1921.

closed in the majority of his cases, while in a few it became at least very small.

These newer methods will make the severely mutilating operations, like Schede's or Estlander's thoracoplasties or Delorme's decortication, less frequently necessary; and when they are necessary, the operation is in a considerably less infected field and is that much less formidable.

Where rigid treatments and constant surveillance are impracticable, the maintenance of negative pressure can be secured by different means. A very efficient and simple contrivance, which I have used for many years, consists of a very thin collapsible rubber tube, hermetically joined to a short ordinary rubber tube which enters the chest wall air-tight. The collapsible tube is about a foot long and leads into a bottle which the patient carries about, attached to his side by adhesive plaster. When the patient coughs or presses occasionally, the chest cavity empties itself to the maximum of its compressibility and is held at this point. To insure complete collapse of the tube and therefore valvular action, we can split this flaccid tube on the sides for a distance and again paste the edges together flat with rubber cement. This flat tube reaches to the bottom of a six ounce medicine bottle, in which there is some 2 per cent formalin-glycerin. The constant maintenance of negative pressure is of course most valuable and ought to be considered as imperative in the treatment of any empyema, recent or old. Though the statement may appear perhaps rash, I feel that only a bronchial fistula ought to excuse us from instituting negative pressure.

Purulent pericarditis can only be mentioned in passing. An excellent recent paper on this subject by Hedblom,* of Rochester, is full of information and shows the way of successful attack in this dangerous condition.

Lung abscess, lung necrosis and lung gangrene belong in one group—the suppurative affections of the lung tissue. Aufrecht, in Nothnagel's "Specielle Pathologie und Therapie," mentions that he had seen 1,501 cases of croupous pneumonia, and that among 253 autopsies on patients who died of pneumonia, there were found lung abscesses three times; once he saw a lung necrosis. Lung gangrene he considers somewhat more frequent than lung necrosis, though no case came under his direct observation.

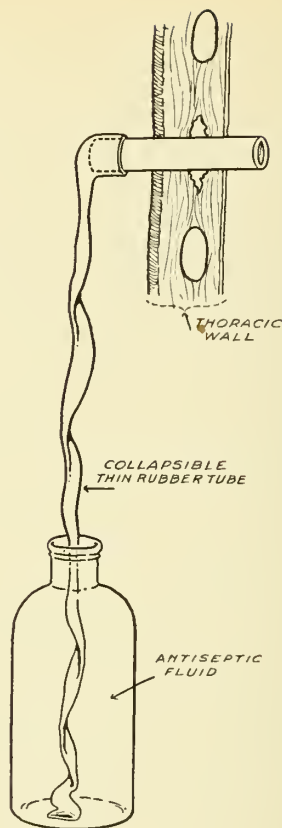


Fig. 1. Rubber tube entering, air-tight, the chest wall. Attached to it a soft flabby rubber tube, which enters a bottle containing some antiseptic fluid. Coughing or pressing empties the chest cavity to the limit of pulmonary expansion. The readily collapsible rubber tube keeps it at this point.

As long as individual cases impress themselves better upon the memory than generalizations, I will discuss the treatment on some examples.

A case of lung gangrene which I have observed of late, though it was said to have developed after pneumonia, was the late result of a tonsillectomy under general anesthesia. It therefore had the same etiology as most of the cases of lung gangrene and lung abscess of late years, and can hardly be called metapneumonic. But the clinical picture and treatment are the same. Pneumonia was said to have set in, which did not clear up, and gradually a foul expectoration was noticed. I saw the patient in June, 1921, about four months after the tonsillectomy, when the nauseating vile odor of her breath made it almost unbearable to stay in the same room. Through a vertical incision on the back we resected the first four ribs on the right side, removing as much of the ribs as seemed possible. Let me say that it would as a rule be better not to touch the first rib, but instead include the fifth. This gives

*The Treatment of Pericarditis with Effusion. Minn. Med., vol. v, p. 40.

good access to the posterior and lateral areas of the upper lobe. We laid a cavity open which contained about three ounces of putrid pus. The walls of this very irregular and ragged cavity were shreddy and blackish. Some bridges of necrotic tissue were divided in order to lay the whole cavity widely open. No attempt was, however, made at removing any of the adherent necrotic tissue. The coughing and expectoration stopped almost suddenly. Before turning the patient on the healthy side at the beginning of the operation, we had her expectorate as much as she could. The head was kept low, and a slight Trendelenburg position is advisable. •

Aspiration of gangrenous material has to be constantly guarded against. For this reason the operation is best done under local anesthesia up to the moment of opening the pleura, when general ether anesthesia (only up to the point of analgesia) becomes necessary in order to remove the pleural reflexes. At the same time differential pressure is now instituted. However, if the case allows it, it is best to operate in two stages, i. e., to stop before opening the pleura and to pack the wound in order to produce adhesions between the costal and visceral

pleural surfaces. Eight or ten days later the lung tissue can be entered with less danger of infecting the general pleural cavity. But even under these conditions differential pressure is an important safeguard. If the pleura is not firmly adherent, differential pressure is necessary for orderly operating and for the preservation of the proper anatomic relations.

The description of a simplified overpressure apparatus which we have used has been previously published.*

In the mentioned case the pleura was known to be greatly thickened and adherent. It was therefore permissible to finish the operation at one session, and under local anesthesia. Loose insertion of gauze, which may be softened by rubbing sterile vaseline into it, ends the operation. We must be very careful not to pull on any shreds of necrotic tissue, as most embarrassing bleeding is quite liable to follow. This is especially to be remembered when the dressings are changed later on. Our patient did pretty well though the wound did not

*Notes on Surgery of the Mediastinum. Ann. Surg., Jan., 1922.



Fig. 2. Skiagram of case of lung gangrene of right upper lobe.

heal without trouble. About four months later the temperature rose to 100.5°. One evening coughing produced foul smelling pus and the temperature became normal again, while the cough remained foul, though not profuse. Cavernous breathing was then heard at the sternal end of the second rib. This rib was resected in front with all of its cartilage for a distance of 8 cm. A pus cavity was opened and drained. This gave us a cure which has now lasted about seven months.

The tendency to suppurating and gangrenous complications exists especially in diabetics and alcoholics. In strong young people a small lung abscess may heal spontaneously. A child of five years had a typical metapneumonic lung abscess in the left lower lobe posteriorly. The symptoms were not very severe. Under our observation the well localized amphoric breathing with the metallic rhonchi persisted for many months, the expectoration very gradually became less, and now after twenty years you cannot detect where the focus was.

Putrid suppurations are almost always surgical, though even here healing of small localized foci has been observed. The severity of the symptoms decides the procedure and the time of intervention. In an average case it is best to wait six or eight weeks before operating, to give time for proper demarcation. If the symptoms recede, it is best to keep watching and waiting.

Metapneumonic lung necrosis was observed only once by Aufrecht in his large experience. In other treatises I could not find it mentioned at all. The case which we observed may therefore be of interest. This lung necrosis was differentiated from lung gangrene, as there was not so much a putrid decomposition with its penetrating odor and the gradual melting down and expectoration of the gangrenous material, but rather a complete simultaneous total necrosis of a large part of the middle lobe on the right side. This large portion of the lung separated itself from the living tissue like a sequestrum. This piece of necrotic lung tissue was the size of a hen's egg and was fished out from the pleural cavity when the empyema was emptied by rib resection. We had the impression that it was the greater portion of the middle lobe. The patient recovered.

These suppurating complications occur principally after lobular and broncho-pneumonia, particularly after influenzal pneumonia. In the gangrenous forms the symptoms, apart from the stench,

are a good deal like that of lung abscess, but a perplexingly rapid emaciation and a greatly dilapidated appearance with a yellowish dry scaly skin is added to the picture, due to the putrid intoxication.

PNEUMONIA IN CHILDREN*

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Pneumonia in children, as in the adult, is usually classified as broncho-pneumonia or lobar pneumonia. While it is true that the former constitutes a majority of the cases, especially in early infancy, the latter is by no means as rare as formerly supposed.

Broncho-pneumonia is one of the most common diseases of infancy and is frequently a secondary manifestation, being encountered as a complication of the milder infections of the respiratory tract, and following the contagious diseases, especially measles, whooping-cough, influenza and less often diphtheria and scarlet fever.

The great majority of cases occur under two years of age, and the highest percentage under one year. It is especially liable to attack the weakling and those debilitated by previous disease.

Lobar pneumonia is a primary infection occurring in the greatest number after three years of age and up to the period of adolescence. It usually attacks the vigorous and healthy child. It runs a typical clean cut course in contrast to broncho-pneumonia, which is often insidious in its onset, often lingering for weeks with frequent relapses. Usually one lobe or a part of a lobe alone is infected, the left base and the right apex being most often involved, although other locations are frequent. Resolution usually takes place quickly and completely after the crisis.

There are few diseases occurring in infancy and childhood in which the clinical symptoms are as varied as in pneumonia. The disease may be ushered in with a high fever and vomiting or its entire course may be afebrile, and in feeble children the clinical symptoms are at times out of all proportion to the physical findings. Cough and

*Presented in Symposium on Pneumonia at St. Paul Clinic Week, January, 1923.

increased respirations, however, are practically constant symptoms.

In broncho-pneumonia the fever is intermittent and usually ends by lysis, a sudden rise in temperature being an indication of fresh lung involvement. In lobar pneumonia the temperature curve more nearly approaches that of the adult and usually ends by crisis. A pseudo-crisis about twenty-four hours before the true crisis is frequently observed.

The respiratory cycle of inspiration, expiration, and rest is usually reversed, the type of breathing being changed to inspiration, rest, and expiration. The expiratory grunt is almost pathognomonic of lobar pneumonia in children.

The cough is often constant and troublesome, causing evident pain and keeping the child awake.

Thoracic pain at this period of life is almost always referred to the abdomen. Any attack of abdominal pain, even with marked tenderness and muscular rigidity, especially if the respirations are increased, should be looked upon with a great deal of suspicion and a pneumonia of the base of the lung, involving the diaphragm, should be excluded before any surgical measures are instituted.

In severe pneumonia the cerebral symptoms are often most marked, and we are at a loss to know whether we are dealing with a meningitis or a meningismus. If the cerebral symptoms are marked from the onset, it is not as apt to be a true meningitis as when the symptoms occur later in the course of the disease. A lumbar puncture is often necessary in order to reach a definite conclusion.

Throughout the entire course of the disease the ears should be carefully watched for evidence of otitis media with its attending discomfort, and the urine watched for a pyelitis, especially in girls.

The more circular chest contour, the elasticity of the chest walls and the smaller volume of lung tissue, tends to modify the physical findings from those in the adult.

An examination should never be made with a child on its side, as the under lung will often offer signs of consolidation and increased resonance. For this reason the child should be in the sitting posture or placed against the nurse's shoulder.

Percussion is of less value in the infant than in the adult. When practiced it should be very light, or the entire lung will be set in vibration and a false impression given. Often the sense of resist-

ance to the percussing fingers gives more valuable information than the percussion note produced.

Auscultation is of great value and the crying voice of the child is a positive help rather than a detriment to this method of examination.

Often diminished breath sounds are the first evidence of a pneumonia in children.

Crepitant râles in the midst of the large moist râles of a bronchitis are the first findings of a pneumonia. No further findings are necessary, as tubular breathing and bronchophony are only found if the areas of consolidation become large enough to modify the transmission of breath sounds.

It is typical of broncho-pneumonia to find in both lungs crepitant râles with small areas of consolidation, and the large coarse râles of bronchitis throughout the entire course of the disease. These varied findings change from day to day and seemingly from hour to hour. In the lobar pneumonia we have no large coarse râles; the sub-crepitant râles last only for a short period, soon becoming displaced by all the evidences of true consolidation.

The cracked pot sound is not a symptom of cavity formation as it is in the adult. Indeed a diagnosis of a lung cavity in infancy and childhood should be made with a great deal of hesitancy, as it is rarely encountered.

A common error is made in differentiating between a case of unresolved pneumonia and an empyema. In empyema in children we find a dullness on percussion extending over a greater area than is usually found in an unresolved pneumonia. Upon auscultation we find bronchophony instead of diminished or absent breath sounds as in the adult. Free use of an exploratory needle will save some embarrassing mistakes.

D'Espine's sign will often show a mediastinal adenopathy which is often very slow in clearing up, and with a roentgenogram, showing enlargement of the peribronchial glands, a recent pneumonia must be excluded before a diagnosis of tuberculosis is made.

The roentgenogram is of great value in making a differential diagnosis. The roentgenograph may show the large consolidation of a lobar pneumonia or the smaller patches of a broncho-pneumonia scattered through both lungs, but in some cases, often severe ones, in which the areas of consolidation may

be minute but very general, will cast no shadow. The roentgenogram is of value in some cases of so-called abortive pneumonia in which all the clinical symptoms of a pneumonia are present but end by crisis in twenty-four to thirty-six hours with but few physical findings.

Broncho-pneumonia in early infancy is always a serious disease. The prognosis depends upon the age of the patient, its environment, and its previous physical condition and whether it is primary or secondary to some other disease.

The statistics giving a high mortality are usually those of institutional cases. In private practice the mortality is from 10 to 20 per cent, but in private practice the severe forms, secondary to the contagious diseases and in children of poor nutrition, are rarely met with.

No case is hopeless, no matter how extensive, if the nutrition can be maintained; but intestinal symptoms such as severe diarrhea, vomiting or tympanitis are of very unfavorable import.

In lobar pneumonia, in children over a year of age, the prognosis is very favorable, the mortality probably being less than 5 per cent. This is due in a large degree to the tremendous heart reserve, the lack of which gives a mortality of 30 per cent in adult life.

Pneumonia is a self limited disease. A proper diagnosis, perfect nursing and careful watching for complications are the essential requirements in caring for a child with this disease. Medication is usually uncalled for, except a sedative for a troublesome cough. Hydrotherapy will allay the nervous manifestations, and the alcohol pack is effectual in reducing excessive temperature.

Changing the infant from side to side is important and even taking the infant up for a few moments at intervals is not contraindicated.

If secretion is excessive, minute doses of atropine are of benefit.

If the cough is rasping and unproductive, the steam kettle gives marked relief.

The pneumonia jacket in a child with a high fever is illogical and unnecessary and only adds to its discomfort.

If cyanosis is marked, strychnine, caffeine, whiskey or oxygen may be given. Stimulating the heart from the onset of the disease is unnecessary.

The serum treatment has been of some benefit in pneumonia caused by the Group 1 pneumococcus, but the vast majority of pneumonias in infancy and childhood are caused by Group 4.

Nourishing food at proper intervals depending upon the age, fresh air, moderate temperature and plenty of sunlight, complete the treatment of pneumonia as found in children.

NITROBENZOL POISONING IN CHILDREN: REPORT OF THREE CASES CAUSED BY SHOE DYE

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CASE I. On December 6, 1921, I was called to see S. W., aged three and one-half years. The patient had been under our observation for the preceding year as a normal child. At about 4 P. M. the mother reported by telephone from a downtown store that she had noticed the child's lips were blue. Thinking the child might be having a chill we advised the mother to take the child home, put her to bed and keep her warm. This the mother did, but the discoloration had increased to such a degree that the mother became very much alarmed and hurriedly called me at 8 P. M.

The appearance of the child was most striking: the face, mucous membranes, hands and feet were deeply cyanosed, almost black; yet the little patient did not appear distressed and was mentally clear. The temperature was normal. The first impression was that of an acute heart failure. The pulse, however, was of good quality, regular, rate about 140. There was no evidence of enlargement of the heart and auscultation was negative except for a faint, systolic murmur over the base. The second thought was poisoning from some coal tar derivative such as acetanilid—but no drug had been given. I had no explanation for the symptoms and was completely at sea. Dr. Archie Beard was called in consultation and he confirmed my physical findings. By this time, however, she had vomited undigested ice cream eaten at lunch and the diagnosis of ptomain poisoning was suggested. She was given an enema, half an ounce of magnesium sulphate and watched most closely during the night. There was no further vomiting, no purging nor prostration and

the next day she was entirely recovered. The diagnosis of ptomain poisoning was therefore hardly tenable. The case therefore remained a distressing puzzle until some time later we came upon Stifel's report of similar symptoms caused by poisoning from shoe dye. We at once questioned the mother on this clue and learned that the day preceding the attack the child's heavy buckskin shoes had been dyed black at a neighborhood shoe repair shop. They had been unwrapped and put on for the first time at noon, just before going down town. The mother had noted "a very heavy, bad odor to the shoes."

CASE II. September 22, 1922. M. G., nine years of age, was brought to the office for examination—for heart trouble presumably. She had been strong and well. The preceding afternoon on her return from school at 3:30 P. M. the mother had noted a peculiar ashen gray color of the face. The child, however, did not complain of feeling ill and was permitted to attend a wiener roast. By 7:30 P. M. she had become cyanosed—in the words of her mother, "her tongue, lips and finger nails were black." Her hands were clammy and there was complaint of headache. The mother became alarmed and called a physician, who found nothing of note except the cyanosis. He assumed the symptoms were due to food poisoning—gave her brandy and prescribed sodium phosphate. The discoloration by midnight had cleared considerably and the next morning she appeared entirely recovered. On examination at our office the next day she appeared normal in every way—no fever, urine negative. A complete blood examination, including spectroscopic for methemoglobin, was negative except for a mild anemia. This time I suspected nitro-benzol poisoning and obtained the following facts from the mother. A pair of shoes had been dyed at a department store shop the preceding day. They were removed from the box in which they were carefully wrapped and put on about 12:30, just before going back to school. Her symptoms began three and one-half hours after putting on the shoes, and were of alarming degree at 7:30 P. M. The shoes were inspected the next day. They were heavy, recently dyed and had a disagreeable odor. We were unable to get a sample of the dye.

For Case III I am indebted to Dr. D. B. Pritchard of Winona, and quote his report verbatim:

"M. L., age sixteen, a girl who had always been in good health, except for an acne of the face and

slight hypothyroidism, on March 22 went to the movies feeling perfectly well. Three hours later she returned home, sat on a radiator, and was reading when her mother noticed that her hands and face looked, as she thought, much soiled with dirt. She told the patient to go upstairs and wash her hands and face and when returning from the lavatory she fainted and was unconscious for about two minutes. Her mother removed her shoes, opened her dress, and carried her to bed.

"When I arrived a few minutes later she was conscious, but her skin and mucous membranes were very cyanotic. Her pulse was so fast that it could not be accurately counted,—something over 200 to the minute, but appeared to be regular. My first thought on seeing her was poisoning by some coal tar derivative, acetanilid, for instance, but she had taken nothing. Her temperature was normal, breathing not labored, no sign of air hunger nor râles in chest. I was completely at sea as to the cause of this attack. I tried pressure on the vagus with the hope of slowing her heart, without effect.

"I saw her four hours later, by which time the pulse was 120, respiration 24, cyanosis unchanged. The next morning the pulse was 100, temperature normal, respiration 22. The cyanosis had almost entirely cleared up. The nurse reported that she had noticed she was becoming less blue about 3 A. M. The day following, at my morning visit, she was apparently completely recovered.

"At my first visit, when going over the child's recent history, the only thing that seemed in any way unusual was that when at the movies she had been considerably annoyed by what she described as a burning and smarting of her feet. I was very much alarmed about her condition and whenever I saw any of my fellow practitioners I related the history of the case to see if anybody could offer a suggestion that would throw any light on it. On April 3, at a meeting of the Winona County Medical Society, one of the members said that he heard that Dr. Rodda of Minneapolis had seen two cases of marked cyanosis as the result of wearing shoes that had recently been dyed. The next morning on my visit to the patient, I found that her shoes had been dyed on the 20th of March, two days before this attack, and that she had worn them to the movies for the first time since dyeing. I called Dr. Rodda on the telephone and he reported that he had seen two such cases and was kind enough to send me such information as he had on the subject. It looks

to me as if the shoe dye were responsible for this cyanotic condition, but I have not been able to find that it produces a tachycardia. The patient is now in her usual health. The shoe dye is in the hands of chemists to be analyzed."

(I may state here that the sample of shoe dye contained a considerable amount of nitro-benzol.)

We have heard of several other cases. Within the past week a university student was taken to the hospital because of extreme cyanosis which lasted forty-eight hours. He had had his shoes dyed while on his feet. The dye contained nitro-benzol.

Because these acute and alarming symptoms are quite inexplicable unless one is cognizant of nitro-benzol poisoning, I thought it well worth while to report these three cases and give citation to the literature. Whereas these reported cases, though alarming, made complete recoveries, there are reports of numerous fatalities in the literature.

Chemistry.—Nitro-benzol, $C_6H_5NO_2$ (commercially known as oil of mirbane), is obtained when benzene is acted upon by nitric and sulphuric acids. It is insoluble in water, has a sweetish taste and a strong odor, resembling oil of bitter almonds. It is used in the manufacture of explosives, anilin dyes, and to a lesser extent in preparing soaps and pomades. Its use, in confectionery and flavorings, is now forbidden under the Pure Food Laws.

Toxicology.—Nitro-benzol breaks down blood corpuscles, forms methemoglobin or a closely related substance and paralyzes nerve centers. It proves poisonous (a) when taken internally, (b) when inhaled as a vapor, (c) when absorbed through the skin.

It is possible that a much smaller dose of the drug may prove toxic when absorbed through the skin than when taken by mouth, since its absorption is delayed when mixed with food contents of the stomach.

Symptoms.—After several hours, the skin, nails and mucous membranes suddenly become livid; the pulse rapid and feeble; the skin, cold and clammy; giddiness and vomiting ensue; in severe cases there follow coma, convulsions, and death by apnea. In severe cases, if death is not immediate, there is jaundice.

Treatment.—When taken internally an emetic should be given, or, better, lavage used. Since the capacity of the blood to transport and give up oxygen is lowered, fresh air, oxygen, and, in severe

cases, artificial respiration are indicated. Respiratory stimulants such as atropin might be of value.

I would call your attention to the fact that aniline, a derivative of nitro-benzol, is also toxic and produces identical symptoms. Anilin is used extensively in preparing dyes for shoes and socks, and in the manufacturing of pencils and ink for stencils. It is probably true that anilin should receive the same consideration as nitro-benzol.

The first fatal case of nitro-benzol poisoning was reported by Letheby² in England in 1863. Stone³ described the first case in this country in 1904. Glaser⁴ in 1911 reported several cases of poisoning caused by inhaling the vapor. Adams⁵ in 1912 collected twenty-nine cases of nitro-benzol poisoning from the literature. Alice Hamilton⁶ discusses chronic forms of industrial poisoning from the same source. But it is the more uncommon and unsuspected sources of the poison to which I wish to call your attention.

Scott and Hanzlik⁷, Loeb, Bock and Fitz⁸ have reported several cases of acute poisoning caused by drinking alcohol denatured with nitro-benzol. Bohland⁹ reports a case due to the use of a delousing remedy containing nitro-benzol.

It was from Stifel's reports that we got an inkling of the cause of symptoms in our cases. He had seen seventeen cases of these peculiar attacks of cyanosis and was unable to find the cause. Water and food had been suspected. In the eighteenth case shoe dye was proven the cause. He was able to cause the same symptoms in privates who volunteered to have their own shoes dyed. Subsequently, he was able to elicit the usual history in most of the other seventeen victims. Cloud¹⁰ reported a case in a child of three years and Miner¹¹ reported a case of poisoning following the use of a russet colored dye.

Perhaps the most striking instances of nitro-benzol poisoning are those in a series of infants, reported by Ewer¹², caused by the dye used in stenciling or making hospital linen. These cases were in infants ranging from sixteen days to eleven weeks of age. Freshly marked linen had been applied so that marks of the ink or dye were found on the skin. Three infants made speedy recovery after typical symptoms; two were very ill, had convulsions and survived only after the administration of stimulants and oxygen. These two infants had broken integument due to eczema. Thomsen¹³ reported other cases in infants from the same cause.

The question may be asked, why cases are not more numerous and why they occur in groups. This we think is due to the fact that one kind of dye may be richer in poison than others, or there may be idiosyncrasy to the drug. Lipschitz¹⁴ thinks this is due to a special reaction of the cells and speaks of it as the "individual poison factor." Doubtless when the symptom-complex is more generally recognized these cases will not be so rare.

In four samples of shoe dye purchased in the open market in Minneapolis, Miss Ziegler, of the Pediatric Department of the University of Minnesota, found nitro-benzol in all.

Since nitro-benzol is now known to be so toxic and to produce such characteristic symptoms, physicians should be on the alert to recognize these cases to run down the source of the poison. A concerted effort of the medical profession might banish the chemical largely from commercial use. If, however, its use in the trades is imperative, knowledge that it is poisonous should be given publicity. Further, simple precautionary directions should appear on original packages of preparations containing nitro-benzol. For instance, exposure of the dyed shoes for a day or two to the open air removes the toxic effect of the dye; freshly marked linen should not be used before being laundered.

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THE ACCESSORY NASAL SINUSES AS FOCI OF INFECTION IN CHILDREN*

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A focus of infection may be defined as the place where bacteria settle after having gained entrance to the organism, and from which they travel by various routes to other tissues or organs producing lesions. It has not been definitely proved that lesions can be produced by toxins formed in these foci of infection, but it is probable. The discharge of bacteria or of such toxins may be constant or intermittent. The pathologic changes produced at the seat of the focus may be of various degrees of activity; at times they are not intense enough to produce clinical symptoms, at other times they elicit very pronounced ones. One of the most characteristic features of the focus of infection is the fact that its removal brings about an alleviation of symptoms. It may happen, however, that secondary foci may develop from the first focus and under these conditions the eradication of the primary focus may not be followed by disappearance of symptoms. It is evident that foci of infection may be established in various parts of the organism, but the upper respiratory tract with its adnexa seems to be the place of predilection.

The tonsils and the accessory nasal sinuses are probably the most important foci of infection, at least during childhood; Griffith states that accessory nasal sinuses are not so often involved in childhood, as in later life. Then he continues: "Kelly could collect but eighteen cases of empyema of the antrum, and Onodi could find in medical literature

*Read before the Southern Minnesota Medical Association, Faribault, Minnesota, June 11, 1923.

only fifty-three instances of disease of the accessory sinus developing before the age of ten years. Phelps and Skillern both emphasize the infrequency of sinusitis in infancy and early childhood, owing to the imperfect development of the sinuses at the period." This statement of Griffith represents the opinion of many pediatricians, and if it were true, the sinuses would not concern us here. Many nose specialists, however, differ decidedly from this opinion. Harke, as early as 1895, opened the sinuses at necropsy in sixty-three of 394 children, nine months to fifteen years of age, and found evidence of disease in fifty-two. Dean has reported observations on two series of children, thirteen years of age or younger, who were destined for tonsillectomy and adenoidectomy. Fifteen per cent of the 234 children observed in the earlier series, and 46 per cent of the 145 in the later series revealed evidence of sinus disease. White, in the examination of fifty children prior to tonsillectomy, found, in thirty-five instances evidence of sinus disease, and Mollison and Kendall found twenty per cent of antrum involvement in 102 children selected for tonsillectomy. Onodi in 1911 stated that it should be regarded as an established fact that when children suffered from frequent attacks of acute cold in the head, some of the accessory sinuses are also affected, and that as a rule infectious disease attacked the partially developed accessory sinuses. Indeed, sinus disease may occur at a very early age. Dean reports a case, showing evidence of sinus involvement in a child six weeks old. Collet reports a case in a child one month old, and Agazzi in a child eight weeks old. Collet considers involvement of the antrum as "not rare in nurslings" and describes a morbid entity resulting from it.

During childhood the antrum is the most commonly diseased of the sinuses, but the ethmoid, more rarely the sphenoid, and still less often the frontal sinuses may be infected. The sphenoid is rarely sufficiently developed to be of clinical significance before the fifth year, and the frontal sinus before the eighth, but it must be emphasized that the sinuses may be fully developed much earlier, and become diseased.

The antrum being the most commonly affected, it is well to point out a few of its peculiarities. In infancy and childhood the antrum is inside of the orbit, its floor is higher than the floor of the nose, its anterior-posterior extension is much greater than

the vertical and is surrounded by bone thicker and more cancellous than that of the adult; the bone also contains teeth buds.

The chief etiologic factor in the production of disease in the sinuses is nasal and naso-pharyngeal infection, which so often occur with large tonsils and adenoids. The infection of the antrum from the teeth, which occurs in adults, is apparently of little or no significance in childhood. (In passing it may be noted that the roots of the teeth may be infected from the sinuses, infection in this reverse order having been observed.) Obstruction of an opening of the sinuses causes a damming of the secretion, interferes with the ventilation, and thus seems to favor bacterial growth.

In a number of instances in which the sinuses have shown evidence of disease, no bacteria could be grown from the material obtained from the sinuses. However, a large variety of bacteria have been cultivated: *Streptococcus hemolyticus*, staphylococcus, pneumococcus, influenza bacillus, meningococcus, and so forth. Dean stressed the greater severity of infections with *Streptococcus hemolyticus*.

Sinus infections occur in the course of various infectious diseases and, in cases of this sort, the sinusitis is often masked by the primary disease, and is, therefore, overlooked. Such infections of the sinuses have been seen in measles, diphtheria (even when no membrane occurs in the nose), scarlet fever, pneumonia, and epidemic cerebro-spinal meningitis. Of the latter Agazzi reports findings from ninety-nine necropsies, of which sixty were in children under fourteen years of age, and in a number of these the post-mortem was not complete with regard to the sinuses. Involvement of the sinuses was present in thirty-six instances. Furthermore, a close association seems to exist between sinusitis and chronic bronchitis, or bronchiectasis. Of seventeen cases of sinusitis in children under fourteen years of age observed at the Mayo Clinic, chronic bronchitis was found in four, and bronchiectasis in five. The connection between bronchitis, or bronchiectasis, and sinusitis has been stressed particularly by Mullin.

PATHOLOGY

The lesions which occur in the sinuses do not differ from those of other mucous membranes, and need not be considered here. Coakley emphasizes these differences from the adult. The cavities are

less developed in children and, therefore, more easily drained. Consequently surgical intervention is not so often necessary and the bone is more easily destroyed.

DIAGNOSIS

The diagnosis offers certain difficulties in children. It is doubtful whether a sinusitis exists if the mucous membrane of the nose and naso-pharynx is entirely normal at repeated examinations; the examination of the nose and naso-pharynx is, therefore, very important. The anterior rhinoscopy can easily be accomplished in children, but at times the posterior rhinoscopy presents unsurmountable difficulties without anesthesia, particularly in young infants. Attention is paid to the discharge coming from the opening of the sinuses, with or without suction.

In the hands of an expert the nasopharyngoscope may be of great value. The transillumination of the antrum and frontal sinuses has been abandoned by many specialists, but is retained by others. So far as the antrum is concerned, the difficulties in childhood are still greater than those encountered in the adult, owing to the greater thickness of the bone and the teeth buds. Obviously, the illumination of the frontal sinuses can only be accomplished when they are there. The same difficulty is attached to the roentgenologic examination, and furthermore, it must be kept in mind that the sinuses may not be developed equally on both sides; the sinus may be present on one side, and absent on the other. Correct interpretation of the findings requires experience. Moreover, depending on the contents of the sinuses, the hardness of the tube with which the roentgenograms are taken will enter into consideration. Not infrequently it happens that a sinusitis escapes detection by means of roentgenograms in spite of the presence of pus, or clinical evidence of involvement. In our small series of cases roentgenograms were taken in fourteen, the other patients leaving before the roentgenologic examination could be made. Of these fourteen, the findings were negative in seven, in spite of the indubitable clinical evidence of sinus involvement, or of the finding of pus at operation.

The clearest evidence of involvement is found by opening the sinuses, and in suspected cases antrum puncture has been recommended, and has often been made. It has the additional advantage of instituting treatment. No ill effects have been re-

ported thus far in children. However, puncture of the antrum in children, owing to the peculiarities of the antrum, has to be done with great care, and we must not forget that cases of collapse and sudden death have occurred following puncture of the antrum. Gording collected a series of such cases and studied the effect of antrum puncture on the animal, and found a reflex influence on the respiratory centers.

Of the objective symptoms, which are prominent in the adult, the sensation of the postnasal discharge is absent in children. The symptoms, as encountered, are mouth breathing, discharge from the nose, which is perhaps the most common, and sneezing. However, in our series of cases (from five to fourteen years of age) the sneezing was a predominant symptom in only one instance, that of a seven-year-old boy. It may perhaps be more common in younger children. Headache was present in our series only twice, in both cases of the frontal type, but severe in only one instance. The discharge may be mucopurulent or purulent. The general condition in most of our cases was rather fair. In only one was there a marked anemia, and in three the general condition was poor. The enlargement of the deep cervical glands and of the submaxillary lymph nodes, especially in cases in which the tonsils and adenoids have been removed, may be of diagnostic significance, particularly in the absence of decayed teeth. I may say that in ten of our cases the tonsils and adenoids had been removed. The history and the thoroughness of their removal is of great significance so far as persistency of glandular enlargement, of well defined febrile attacks, of discharge from the nose and from the nasopharynx, point to the possible involvement of the sinuses. The fever in sinus disease is dependent on the degree of involvement.

The blood picture has never been stressed to my knowledge, but Dr. Bunting called my attention to the possibility of an eosinophilia, particularly with an acute attack. In one of our cases the eosinophils reached the number of 14.5 per cent. This phase of the subject awaits further development.

The discussion of the diagnosis may be concluded with a remark of Coakley that the difficulties of examination and the uncertainties of some of the tests are in direct proportion to the age of the patient. The younger the child, the more one has to consider the probability of the infection, as absolute diagnosis is rarely possible.

DISCUSSION

As Onodi has said, it need hardly be pointed out that many fatal cases of this disease remain obscure. The possibility of a fatal attack of sinus disease has been emphasized by Dean, who reported the death of a two month old infant. As mentioned, the direct surgical interference is less frequently necessary in children than in adults and, indeed, it has been stated that 80 per cent of the cases of sinusitis in children, associated with enlarged and infected tonsils and adenoids, clear up with the removal of the tonsils and adenoids. Bronchitis and sinusitis may occur simultaneously, and the eradication of the sinus disease may enable the defensive mechanism of the organism to overcome the rest of the disease. A similar relationship has been noticed in cases of tuberculosis, in which the removal of a badly infected organ, as for instance a kidney, led to marked improvement of other tuberculous manifestations, in spite of the fact that numerous tuberculous foci were present.

The relationship between sinus disease and involvement of the lungs has been discussed further by Dunham and Skavlem, who point out that in a number of cases which were diagnosed as tuberculosis of the lungs by able clinicians, an involvement of the lungs referable to the sinuses, infected tonsils, or infected teeth was demonstrable. In our small list we have roentgenologic diagnoses of tuberculous involvement of both upper lobes in cases in which the tuberculin test was negative.

Dean has emphasized very strongly the relation of sinus disease to infective arthritis of infants and the cure obtained by their treatment. With micro-organisms obtained from such cases he was able to produce arthritis in rabbits. At present we have a little girl in the hospital with severe arthritis, but repeated examination of her nose has not revealed any sinus disease, nor have repeated roentgenologic examinations shown sinus involvement.

It has also been claimed that a focal relationship exists between sinusitis and otitis media, acute cervical adenitis and phlyctenular conjunctivitis, and in older children between sinusitis and meningitis, brain abscess, orbital cellulitis, neuralgia, particularly of the second branch of the fifth nerve, pyelitis, recurrent vomiting, chorea and other nervous manifestations, endocarditis, asthma, chronic bronchitis and bronchiectasis, and nephritis. Encephalitis, no doubt, will be added to the list before long. The results which have been reported in

cases of asthma of years' duration which have been cured by treatment of sinus disease are very striking. I have been told of a number of cases of nephrosis in children which cleared up following treatment of sinus infection. It seems that the sinuses may be diseased in children rather often, and their importance as possible foci of infection is established. How frequently the sinuses do act as foci of infection is, however, another question which awaits statistical study.

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EDITORIAL

The State Meeting

A perusal of the tentative program which appears elsewhere in this issue of the journal will convince the reader that the program committee has done unusually well in choosing subjects and speakers for this year's meeting. Efforts have been made to choose subjects of practical interest, and surgical dry clinics will be an innovation of further practical value.

The work of the program committee is no simple task. Members of the committee must exercise good judgment with the sole aim in view of producing the best possible program. Their arbitrary powers must be exercised and personal feelings ignored.

The final program is to be mailed to each member of the Association in advance of the meeting, which will take place in St. Paul, October 10, 11 and 12, 1923, Deo volente!

The Narcotic Evil

Of all the drugs in the physician's armamentarium, opium and cocaine (with their derivatives) are undoubtedly the most valuable. These drugs have relieved untold suffering and with the advance of modern surgery are indispensable.

These so-called narcotic drugs, like everything else of value in this world, are much abused, but the extent to which they are misused is not commonly appreciated. Current literature is calling attention to the recent marked increase in the illegal use of narcotics in this country. In a speech before the Washington Anti-Narcotic Conference, Fred A. Wallis, commissioner of correction of New York, recently made the startling statement that the United States heads the list of all other countries in the use of opium derivatives with a per capita consumption of 36 grains as compared with India, 27; France, 4; England, 3; Germany, 2; China, 2, and Italy 1 grain. The same authority refers to the known 500,000 addicts in New York state alone, whose average age is twenty-three. It is elsewhere estimated that there are between one and two million habitual narcotic users in the United States. Surely alcohol is not our sole problem.

No argument is needed as to the deleterious effects on the habitué. The paralyzing of efficiency is only one of its phases. Its use is like a disease—of short incubation, insidious development, and the peculiar tendency of the affected individual to inveigle others into the same predicament results oftentimes in a rapid contagion. The well known undermining of character and moral sense and the craving for the drug leads the helpless individual to any length in order to obtain it. Drug users belong commonly to the criminal class.

What is to be done? Surely this is a large problem and the solution is not apparent.

Publicity is of value and its searchlight is being thrown upon the situation. The greatest hope, as in the control of any epidemic, lies in prevention. Federal and state authorities can do little without a strong public opinion back of them. This should not be difficult in the case of an evil for which there are few proponents. Those who have to be fought are the individuals who are making enormous profits through illicit traffic in these drugs, and a certain proportion of the addicts themselves. In San Francisco alone, custom seizures of narcotics in 1922 were valued at \$162,000. Probably ten times this amount was smuggled into the same port

in that year. These figures serve to indicate the enormous sums of money involved.

The poppy and coca plants are raised in foreign countries. Smuggling will be hard to control. International co-operation is essential in the solution of the problem and control of drugs from producer to consumer will be necessary. The League of Nations has considered the question of the limitation of the cultivation of the poppy to the needs of medicine, but at its meeting, October 20, 1921, failed to recommend a resolution to this effect submitted by a heathen Chinese, Wellington Koo by name, and, instead, substituted the word "legitimate" for the phrase "strictly medicinal"; for it appears that in certain countries, notably India, the chewing of the poppy is legitimate. Little can be accomplished internationally as long as some nations legalize the non-medicinal use of narcotics.

The individual addict must, of course, be treated. This phase of the problem our country particularly has to meet. Sudden withdrawal of the drug produces severe constitutional symptoms and medical authorities differ as to the best method of treatment. This difference of opinion has led to much criticism, on the part of many members of the profession, of recent rulings by the administrator of the Harrison narcotic law whereby the profession has been dictated to in the matter of treatment. It is contended that such rulings have driven the habitu  from the doors of the regular profession and encouraged the illicit trade in drugs.

It is doubtless true that a certain amount of blame can be laid at the door of the profession for causing addicts through the careless administration of narcotics. If the average age of the 500,000 known habitu s in New York state is twenty-three it seems unreasonable to suppose that any large proportion are the result of medical administration. Nevertheless, in this matter too great care on our part cannot be taken. Where we are most to blame is the prostitution of the profession by a few members who sell their birthright without attempting to cure these unfortunates. Such members, admittedly few, must be severely dealt with. It is becoming more and more apparent that each county society will have to assume this unpleasant task.

Diathermia

Recent reports of the use of diathermia in the treatment of pneumonia patients in St. Mary's Hos-

pital in Hoboken and in the United States Marine Hospital on Staten Island have brought to the attention of the medical profession and the laity a method for the therapeutic administration of heat, which, though not a recent discovery, has been little used by the profession. In short, diathermia as the word signifies (*dia*—through, and *thermos*—heat) is the production of heat in the field between two electrodes of a high frequency electric current.

Nine years ago the writer had the opportunity of observing a demonstration of diathermia in Nagelschmidt's physiotherapy institute in Berlin. When the electrodes were applied to the arm a localized flushing of the skin occurred and a sense of warmth was felt throughout the arm between the electrodes. To illustrate what could be accomplished with a strong current the electrodes were placed in egg albumen and coagulation occurred in the intervening electric field. The possibilities of this method in producing a local hyperemia and increase in temperature made a very definite impression on the observers present.

The transmission of heat has been classified into conductive, convective and conversive. The two former methods are used extensively in therapeutics as illustrated respectively by the hot compress and the incandescent electric lamp. Conversive heat is illustrated by diathermia where the resistance of the portion of the body between the electrodes converts the current into heat. Increased temperature results in the tissues lying in the pathway of the current, with resulting hyperemia, and possibly inhibition of bacterial growth. The desirability of hyperemia in hastening reparative processes has long been recognized and it seems not unreasonable to predict that diathermia will take its place as the best method for producing hyperemia.

A technical description of the mechanics of diathermia will not be attempted. Suffice it to say that the current used is known as the d'Arsonval current which has an inconceivably high frequency (millions per second) and that this is obtained by step-up transformers and the use of condensers.

The response of tissues to low frequency in contrast to high may be compared in a way to the sensations produced on the eye and ear by a succession of stimuli. The eye can detect a succession of images up to a certain point where eye strain, evinced by headache and vomiting, ensues, and beyond which a sensation of continuous motion results. Similarly, with the ear, beyond a certain

point a succession of sounds is indistinguishable and is interpreted as sustained sound. Electrical stimulation of tissue produces certain reactions of sensation and contraction. The enormously high frequency of the d'Arsonval current fails to produce these reactions but raises the temperature of the tissues, a result not obtainable by ordinary electric currents.

Inflammation is the normal reaction of the tissues in the process of repair. The application of diathermia can be varied so as to produce a condition varying from the first blush of hyperemia to actual necrosis. No part of the anatomy is inaccessible to application and any morbid condition where hyperemia is desirable is sufficient indication for its use. The presence of undrained pus is said to be a definite contraindication as metastatic abscesses or pyemia may result. The liability of provoking a hemorrhage is also a contraindication.

Electricity as a therapeutic agent does not stand well with the medical profession and with good reason. Its use has been associated with much fraud so that one hesitates to take up the cudgel for electricity in any form. Diathermia, however, merits more extensive use than it has so far received.

OBITUARY

DR. EDWARD ELDEE AUSTIN

Dr. Edward Eldee Austin, a practicing physician of Minneapolis for forty years and a former member of the faculty of the medical school, University of Minnesota, died Thursday, August 10, 1923, at the age of 69 years.

Dr. Austin was born at Scotts, Michigan, in 1854. He was graduated in medicine from the University of Michigan at Ann Arbor in 1884, coming directly to Minneapolis, where he established offices for the practice of his profession.

Dr. Austin is survived by his widow, Mrs. Ella Austin, and two daughters, Miss Florence Austin and Mrs. John A. Dunn, all of Minneapolis.

DR. GEORGE EDGAR BENSON

Dr. George Edgar Benson, Minneapolis, died at his home Tuesday, July 31, 1923, following an illness of two months, at the age of 46 years.

Dr. Benson was a graduate of the medical school, University of Minnesota, class of 1901. On the day of his graduation he became associated with Dr. C. D. Wright, with whom he practiced for a period of twenty-two years.

Dr. Benson is survived by his widow, one son, Robert Benson; his parents, Mr. and Mrs. Aaron Benson, and a brother, Bernard Benson, all of Minneapolis.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION

Notice is hereby given of an amendment to Article IX, Section 3, of the constitution of the Minnesota State Medical Association submitted to the House of Delegates at its meeting Saturday, October 14, 1922, in Minneapolis.

The section mentioned reads as follows:

"The officers of this Association shall be elected by the House of Delegates on the morning of the last day of the Annual Session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councillor, and no person shall be elected to any such office who is not in attendance upon that Annual Session, and who has not been a member of the Association for the past two years."

It is proposed to change the section to read as follows:

"The officers of this Association shall be elected by the House of Delegates at a meeting to be held the second day of the Annual Session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councillor, and no person shall be elected to any such office who is not in attendance upon that Annual Session, and who has not been a member of the Association for the past two years."

MINNESOTA STATE MEDICAL MEETING

The annual state medical meeting will be held this year in St. Paul, October 10 to 12 inclusive. The Council will meet at 10 A. M. and the House of Delegates at 2 P. M., Wednesday, October 10. The scientific program will occupy all of Thursday and Friday, October 11 and 12, with the annual banquet Thursday evening.

Two distinguished guests, Dr. R. T. Woodyatt, Associate Professor in Medicine, Rush Medical College, Chicago, and Dr. E. A. Graham, Professor of Surgery, Washington University Medical School, St. Louis, Mo., will attend the meeting and will address the members following the banquet. They will also take part in the scientific program in the afternoon.

Dr. Frederick H. Neher, Lowry Bldg., St. Paul, has been placed in charge of arrangements for the convention by the Ramsey county society.

The final program will be mailed to each member of the Association in advance of the meeting. Following is the program in brief:

GENERAL MEETING

THURSDAY, OCTOBER 11, 1923

8 A. M.

Presidential Address—E. S. Judd, M.D., Rochester.

Why Has the Medical Profession Lost Its Position Once Held in the Esteem of the Public?—F. J. Savage, M.D., St. Paul; Senator J. D. Denegre, St. Paul.

6:30 P. M.—BANQUET

Address—R. T. Woodyatt, M.D., Chicago.

Address—Evarts A. Graham, M.D., St. Louis.

Address—Chas. H. Mayo, M.D., Rochester.

FRIDAY, OCTOBER 12, 1923

2 P. M.

The Clinical Significance of Pain in the Area Supplied by the Fifth Cranial Nerve—H. L. Parker, M. D., Rochester.

Discussion by E. M. Hammes, M.D., St. Paul.

E. L. Gardner, M.D., Minneapolis.

E. E. McGibbon, D.D.S., Minneapolis.

Root Pains and General Diagnosis—H. W. Woltmann, M.D., Rochester.

Discussion by Arthur Hamilton, M.D., Minneapolis.

Surgical Considerations of Extra-Pleural Thoracoplasty—A. A. Law, M.D., Minneapolis.

Medical Considerations of Extra-Pleural Thoracoplasty—E. Mariette, M.D., Minneapolis.

Discussion by Everett K. Geer, M.D., St. Paul.

J. A. Myers, M.D., Minneapolis.

Work Being Done in Minnesota for the Hard of Hearing—Horace Newhart, M.D., Minneapolis.

Discussion by H. I. Lillie, M.D., Rochester.

Carl Larsen, M.D., St. Paul.

Report on the Survey of the Mid-Wife Situation in Minnesota—Ruth Boynton, M.D., Minneapolis.

SURGICAL SECTION

Symposium on Diseases of the Gall Bladder—

Differential Diagnosis—J. P. Schneider, M.D., Minneapolis.

Roentgenological Diagnosis—Frank Bissell, M.D., Minneapolis.

Surgical Diagnosis—Harry P. Ritchie, M.D., St. Paul.

Surgical Treatment—Arnold Schwyzer, M.D., St. Paul.

Discussion and Demonstration of Patients—Evarts A. Graham, M.D., St. Louis.

Report of a Case of the Rupture of the Kidney—F. G. Watson, M.D., Worthington, Minn.

Discussion by E. A. Arnold, M. D., Adrian, Minn.

Gilbert J. Thomas, M.D., Minneapolis.

The Surgical Treatment and Results of Spinal Cord Tumors—A. W. Adson, M.D., Rochester.

Discussion by A. C. Strachauer, M.D., Minneapolis.

Arthur Sweeney, M.D., St. Paul.

J. Frank Corbett, M.D., Minneapolis.

The Rectum as a Factor in Chronic Focal Infections—W. A. Fansler, M.D., Minneapolis.

Discussion by L. A. Buie, M.D., Rochester.

Extra-Uterine Pregnancy—T. W. Weum, M.D., Minneapolis.

Discussion by F. L. Adair, M.D., Minneapolis.

R. D. Mussey, M.D., Rochester.

The Ear in General Medical Diagnosis—H. I. Little, M.D., Rochester.

Discussion by Horace Newhart, M.D., Minneapolis.

Charles Spratt, M.D., Minneapolis.

Actinomyces of the Head and Neck—Gordon B. New, M.D., Rochester.

Discussion by E. Evans, M.D., La Crosse, Wis.

A. H. Sanford, M.D., Rochester.

Metastasis from Breast Cancer—W. A. Coventry, M.D., Duluth.

Apparent Deformity of the Pillars of the Fauces after Tonsillectomy—F. J. Pratt, M.D., Minneapolis.

Discussion by Wm. R. Murray, M.D., Minneapolis.

H. I. Lillie, M.D., Rochester.

Carl Larsen, M.D., St. Paul.

Headaches from the Standpoint of the Ophthalmologist—Paul Berrisford, M.D., St. Paul.

Obstetrics and the Country Practitioner—M. C. Bergheim, M.D., Hawley, Minn.

Discussion by J. C. Litzenberg, M.D., Minneapolis.

Oscar Locken, M.D., Crookston, Minn.

A. J. Chesley, M.D., Minneapolis.

Factors of Safety in Gastric Surgery—Donald C. Balfour, M.D., Rochester.

Discussion by A. C. Strachauer, M.D., Minneapolis.

Arnold Schwyzer, M.D., St. Paul.

Diagnosis and Treatment of Hydronephrosis—F. E. B. Foley, M.D., St. Paul.

Discussion by Warren Dennis, M.D., St. Paul.

Wm. F. Braasch, M.D., Rochester.

Symposium on Fractures of the Femur—

Anatomy and Mechanics of Fractures of the Femur—Wallace Cole, M.D., St. Paul.

Non-Operative Treatment — H. W. Meyerding, M.D., Rochester.

Operative Treatment—Charles A. Reed, M.D., Minneapolis.

Clinic by Alex Colvin, M.D., St. Paul.

MEDICAL SECTION

Hypertension in Pregnancy—F. L. Adair, M.D., Minneapolis.

Discussion by E. L. Gardner, M.D., Minneapolis.

A. G. Schulze, M.D., St. Paul.

Archibald McDonald, M.D., Duluth.

Thrombo-angeitis Obliterans — H. W. Christianson, M.D., Wykoff, Minn.

Experiments in Renal Insufficiency with Special Reference to Blood Pressure and Fundus Changes—Hilding C. Anderson, M.D., Duluth.

A Preliminary Note: The Blood Serum in Pernicious Anemia with a Consideration of Certain Important Phenomena—Eugene Riggs, M.D., St. Paul.

Discussion by A. R. Hall, M.D., St. Paul.

Gilbert Kvitrud, M.D., St. Paul.

A. E. Mark, M.D., St. Paul.

Relation of Recurrent or Secondary Peptic Ulcers to Focal Infection—George B. Eusterman, M.D., Rochester.

Discussion by E. C. Rosenow, M.D., Rochester.

Robt. T. Riser, M.D., Minneapolis.

A. C. Strachauer, M.D., Minneapolis.

Concentrated Food in Infant Feeding—T. L. Birnberg, M.D., St. Paul.

Discussion by Edgar J. Huenekins, M.D., Minneapolis.

M. Scham, M.D., Minneapolis.

J. T. Christison, M.D., St. Paul.

The Diagnosis of Acute Appendicitis in Children—H. T. Helmholtz, M.D., Rochester.

Discussion by Frederick Rodda, M.D., Minneapolis.
E. S. Judd, M.D., Rochester.
Frederic Wm. Schlutz, M.D., Minneapolis.

Bronchial Asthma—John M. Lajoie, M.D., Minneapolis.

Discussion by C. B. Wright, M.D., Minneapolis.
F. H. K. Schaaf, M.D., Minneapolis.
C. N. Hensel, M.D., St. Paul.

Syphilitic Aortitis—F. A. Willius, M.D., Rochester.

Discussion by John Stokes, M.D., Rochester.
Henry Ulrich, M. D., Minneapolis.
Edward L. Tuohy, M.D., Duluth.

Massive Collapse of the Lung—T. J. Hirschboeck, M.D., Duluth.

Discussion by J. P. Schneider, M.D., Minneapolis.
Geo. D. Head, M.D., Minneapolis.

Focal Infection in Pernicious Anemia—H. M. Conner, M.D., Rochester.

Psycho-Neurosis—Edward J. Engberg, M.D., St. Paul.

Discussion by Chas. R. Ball, M.D., St. Paul.
A. S. Hamilton, M.D., Minneapolis.
H. Woltmann, M.D., Rochester.

Rest and Diet in the Treatment of Cardio-Vascular Disease—J. L. Crewe, M.D., Rochester.

Epidemic Encephalitis—E. M. Hammes, M.D., St. Paul.

Discussion by C. R. Ball, M.D., St. Paul.
A. S. Hamilton, M.D., Minneapolis.
H. Woltmann, M.D., Rochester.

Congenital Syphilis of the Nervous System with a Report on Juvenile Tabes in Twins—Frank Whitmore, M.D., St. Paul.

Chronic Nephrosis—Leo Rigler, M.D., Minneapolis; Harold Rypins, M.D., Minneapolis.

Symposium on Metabolism—

Metabolism—Walter M. Boothby, M.D., Rochester.
The Value of the Basal Metabolic Rate in General Medical Practice—A. E. Mark, M.D., St. Paul.
The Value of the Basal Metabolic Rate in Surgical Practice—T. L. Chapman, M.D., Duluth.
Later Developments of Value in the Estimation of the Basal Metabolic Rate—Max H. Hoffman, M.D., St. Paul.

Symposium on Insulin—

A General Discussion of the Preparation of Insulin and Its Value in Diabetes—Robert T. Woodyatt, M.D., Chicago.
The Treatment of Simple Cases of Diabetes—A. H. Beard, M.D., Minneapolis.
The Treatment of Emergencies in Diabetes—R. M. Wilder, M.D., Rochester.
Indications for the Use of Insulin—Edward L. Tuohy, M.D., Duluth.

Symposium on Non-Pulmonary Tuberculosis—

Cutaneous Manifestations of Tuberculosis — John H. Stokes, M.D., Rochester.
(Subject to be announced later)—Walter J. Marcley, M.D., Minneapolis.

Tuberculosis of the Bones and Joints—Carl C. Chatterton, M.D., St. Paul.

Genito-Urinary Tuberculosis—Herman C. Bumpus, M.D., Rochester.

TRI-STATE DISTRICT MEDICAL ASSOCIATION

The annual meeting of the Tri-State District Medical Association which includes the states of Iowa, Illinois, Wisconsin and Minnesota and districts of the surrounding states will take place at Des Moines, Iowa, October 29, 30, 31, and November 1, 1923.

The meeting will consist of scientific addresses, essays, symposiums and diagnostic clinics.

Membership in the State Association is sufficient qualification for attendance and participation in the program.

Headquarters of the assembly will be the Fort Des Moines Hotel and the sessions will be held in the new Woman's Club building.

Hotel accommodations should be made early by communicating with the Fort Des Moines Hotel or Dr. Walter L. Biering, Des Moines, Ia.

The following is a partial list of the eminent members of the profession who have accepted places on the program:

Sir Robert A. Falconer, President of University of Toronto, Toronto, Canada.

Dr. Fred H. Albee, Prof. of Orthopedic Surgery, New York Post-Graduate Medical School, New York, N. Y.

Dr. Edward William Archibald, Associate Prof. of Clinical Surgery, University of McGill, Montreal, Canada.

Dr. William S. Baer, Associate Prof. of Orthopedic Surgery, Johns Hopkins University, Medical School, Baltimore, Md.

Dr. Willard Bartlett, St. Louis, Missouri.

Dr. Frederic Atwood Besley, Prof. of Surgery, Northwestern University, Medical School, Chicago, Ill.

Dr. Francis G. Blake, Prof. of Medicine, Yale University, School of Medicine, New Haven, Conn.

Dr. Hugh Cabot, Dean and Prof. of Surgery, University of Michigan, Medical School, Ann Arbor, Mich.

Dr. Richard Cabot, Prof. of Medicine, Harvard University, School of Medicine, Boston, Mass.

Dr. Frederic J. Cotton, Associate in Surgery, Harvard University, School of Medicine, Boston, Mass.

Dr. George W. Crile, Prof. of Surgery, Western Reserve University, School of Medicine, Cleveland, Ohio.

Dr. Byron B. Davis, Prof. of Clinical Surgery, University of Nebraska, School of Medicine, Omaha, Neb.

Dr. John B. Deaver, Prof. of Surgery, University of Pennsylvania, School of Medicine, Philadelphia, Pa.

Dr. Charles P. Emerson, Dean and Prof. of Medicine, Indiana University, School of Medicine, Indianapolis, Ind.

Dr. John F. Erdmann, Prof. of Surgery, New York Post-Graduate School of Medicine, New York, N. Y.

Dr. Robert E. Farr, Minneapolis, Minn.

Dr. Charles H. Frazier, Prof. of Neurosurgery, University of Pennsylvania, School of Medicine, Philadelphia, Pa.

- Dr. Leonard Freeman, Prof. of Surgery, University of Colorado, School of Medicine, Denver, Colo.
- Dr. Willis D. Gatch, Prof. of Surgery, Indiana University, School of Medicine, Indianapolis, Ind.
- Dr. William A. Jenkins, Prof. of Medicine and Clinical Medicine, University of Louisville, School of Medicine, Louisville, Ky.
- Dr. Elliott P. Joslin, Prof. of Clinical Medicine, Harvard Medical School, Boston, Mass.
- Dr. Frank C. Knowles, Prof. of Dermatology, Jefferson Medical College, Philadelphia, Pa.
- Dr. Dean Lewis, Prof. of Surgery, Rush Medical College, Chicago, Ill.
- Dr. Charles F. Martin, Prof. of Medicine, McGill University, Faculty of Medicine, Montreal, Canada.
- Dr. Charles H. Mayo, Mayo Clinic, Rochester, Minn.
- Dr. William J. Mayo, Mayo Clinic, Rochester, Minn.
- Dr. Charles N. Meader, Dean and Prof. of Medicine, University of Colorado, School of Medicine, Denver, Colo.
- Dr. Oliver H. Pepper, Assistant Prof. of Medicine, University of Pennsylvania, School of Medicine, Philadelphia, Pa.
- Dr. Canby G. Robinson, Dean and Prof. of Medicine, Vanderbilt University, School of Medicine, Nashville, Tenn.
- Dr. Ernest Sachs, Prof. of Clinical Neurosurgery, Washington University, Medical School, St. Louis, Mo.
- Dr. Clarence L. Starr, Prof. of Surgery, University of Toronto, Faculty of Medicine, Toronto, Canada.
- Dr. William S. Thayer, Emeritus Prof. of Medicine, Johns Hopkins University, School of Medicine, Baltimore, Md.
- Dr. Allen Whipple, Prof. of Surgery, Columbia University, College of Physicians and Surgeons, New York, N. Y.
- Dr. Hugh H. Young, Clinical Prof. of Urology, Johns Hopkins University, Baltimore, Maryland.

MEDICAL RESEARCH AND ADVANCEMENT SYMPOSIUMS

Presented by the teaching staffs of the following universities:

- University of Iowa.
- University of Wisconsin.
- University of Illinois.
- University of Chicago.
- Northwestern University.
- Western Reserve University (Crile Clinic), Cleveland.
- University of Minnesota Graduate School of Medicine (Mayo Clinic), Rochester.
- University of Indiana.
- University of Michigan.

PROGRAM COMMITTEE

- Dr. Dean Lewis, Chicago, Illinois.
- Dr. E. Starr Judd, Rochester, Minnesota.
- Dr. Walter L. Bierring, Des Moines, Iowa.
- Dr. John L. Yates, Milwaukee, Wisconsin.

OFFICERS OF THE ASSOCIATION

- President of Clinics—Dr. William J. Mayo, Rochester, Minn.
- President—Dr. Horace M. Brown, Milwaukee, Wis.
- President-elect—Dr. Clifford U. Collins, Peoria, Ill.
- Vice-President, Wisconsin—Dr. Joseph S. Evans, Madison.

- Vice-President, Illinois—Dr. Edwin P. Sloan, Bloomington.
- Vice-President, Iowa—Dr. Frank M. Fuller, Keokuk.
- Managing-Director—Dr. William B. Peck, Freeport, Ill.
- Associate Managing-Director—Dr. J. Sheldon Clark, Freeport, Ill.
- Secretary—Dr. Edwin Henes, Jr., Milwaukee, Wis.
- Treasurer—Dr. Henry G. Langworthy, Dubuque, Iowa.

NOTE.—Requirement for admittance—membership in some State Medical Society.

MEDICAL WOMEN'S NATIONAL ASSOCIATION

The ninth annual meeting of the Medical Women's National Association was held in San Francisco, June 25 and 26, 1923, in conjunction with the American Medical Association meetings, Dr. Grace N. Kimball, president, presiding.

Dr. Kate Campbell Mead of Middletown, Connecticut, president-elect for 1923, was installed as president. Dr. Katherine C. Manion of Port Huron, Michigan, was chosen as president-elect. Other officers elected for the ensuing year are: First vice-president, Dr. Martha Welpton, San Diego, California; second vice-president, Dr. Marjory J. Potter, San Diego, California; third vice-president, Dr. Florence W. Duckering, Boston, Massachusetts; secretary, Dr. Jessie W. Fisher, Middletown, Connecticut; treasurer, Dr. L. Rosa H. Gantt, Spartanburg, South Carolina.

The 1924 annual meeting of the Association will be held in Chicago.

PARK REGION MEDICAL SOCIETY

The summer meeting of the Park Region Medical Society was held Thursday, July 19, 1923, at the Otter Tail Sanatorium, Battle Lake, with a record attendance.

The program, which had for the general topic, "Tuberculosis in Its Different Phases," included the following papers:

Dr. A. C. Baker, Fergus Falls—"Tuberculous Peritonitis."

Dr. Frank Naegeli, Fergus Falls—"Tuberculosis in Pregnancy."

Dr. W. S. Broker, Battle Lake—"Present Concepts in Tuberculosis."

Dr. Robinson Bosworth of Saint Paul gave a general survey of the work being done in the state to combat tuberculosis.

A banquet in honor of the visiting physicians was given following the business session in the evening.

WASHINGTON COUNTY MEDICAL SOCIETY

A Ladies' Auxiliary to the Washington County Medical Society was organized on June 5 at the home of Mrs. W. R. Humphrey of Stillwater. It was decided to hold monthly meetings at the homes of the members. The following officers were elected: President, Mrs. F. G. Landeen; vice-president, Mrs. G. A. Newman, secretary-treasurer, Mrs. J. H. Haines. On July 13 a joint picnic was held with the medical society, an automobile trip being made to Prospect Park, Hudson, Wisconsin, where the ladies served dinner at the pavilion.

OF GENERAL INTEREST

Dr. J. H. Stokes has returned from a cruise along the coast of Maine.

Dr. and Mrs. W. B. Grise, Austin, have returned from a trip through northern Minnesota.

Dr. and Mrs. C. F. Brigham of St. Cloud recently returned from a cruise on the Great Lakes.

Dr. J. M. La Joie, Minneapolis, has returned from a trip to Duluth and northern Minnesota.

Dr. and Mrs. J. B. Clement of Lester Prairie have returned from a motor trip through the East.

Dr. H. B. Bailey, Ceylon, has returned from a trip to Duluth and the northern lake region.

Dr. and Mrs. O. J. Johnson and family, St. Peter, have returned from a motor trip to Illinois.

Dr. C. F. Andrews, formerly of the Mayo Clinic, Rochester, is now located in Denver, Colorado.

Dr. and Mrs. E. C. Hartley of Minneapolis recently returned from a trip on the Pacific coast.

Dr. and Mrs. Joseph Nicholson, Brainerd, have returned from an extended trip on the Pacific Coast.

Dr. and Mrs. E. W. Buckley, St. Paul, recently returned from a two weeks' visit at Madelaine Island.

Dr. and Mrs. J. F. Holbrook, Mankato, recently returned from a five weeks' trip along the Pacific coast.

Dr. F. C. Dolder and family, Eyota, have returned from a motor trip to Chicago and other eastern points.

Dr. Leo Adams, formerly of the St. Francis Hospital, La Crosse, Wisconsin, is now located at Rosemount.

Dr. Kenneth Caldwell has opened offices at 642 Lowry Building, St. Paul, for the practice of his profession.

Dr. and Mrs. F. J. Savage of St. Paul have returned from a vacation spent at Burntside Lodge, near Ely, Minnesota.

Dr. and Mrs. Paul D. Berrisford, St. Paul, have returned from a motor trip through the northern part of the state.

Dr. J. C. Harding has announced the opening of offices in the Lowry Building, St. Paul, for the practice of medicine.

Dr. William A. Meierding and son Billy recently returned from a motor trip to the Black Hills and Shepherd, Montana.

Dr. I. S. Benson and family of Willmar have returned from a trip through Yellowstone Park and other western points.

Dr. and Mrs. D. G. Colp of Minneapolis returned recently from a six weeks' trip to Dawson, Alaska, and other western points.

Dr. Harold J. Prendergast of St. Paul has become associated in the practice of medicine with Dr. R. A. Beise at Brainerd.

Dr. V. C. Thompson, while temporarily retaining his resi-

dence in Stillwater, has resumed his practice at Marine-on-St. Croix.

Dr. W. H. Replogle of Wabasha recently became the sole proprietor of the Guernsey Dairy Farm located near Wabasha.

Dr. and Mrs. Harold Rypins of Minneapolis have returned from a motor trip of several weeks to points in northern Minnesota.

Dr. and Mrs. I. H. Kiesling and little son of Nashwauk have returned from a motor trip through the southern part of the state.

Dr. and Mrs. A. W. Ide, St. Paul, are now in Europe, where Dr. Ide will visit surgical clinics in England, France, Switzerland and Italy.

Dr. Carol Jamison of the Mayo Clinic, Rochester, will leave this month for Vellora, India, where she will continue the practice of medicine.

Dr. and Mrs. C. F. Brigham and son Charles, of St. Cloud, have returned from a motor trip through New York, New Jersey and Massachusetts.

Dr. P. J. Griffin has disposed of his practice at Fertile to Dr. A. L. Larson, formerly of Eveleth, and has located at Detroit for further practice.

Dr. E. C. Gaines and family of Buffalo Lake have returned from a motor trip through the East to New York, Philadelphia and Washington, D. C.

Dr. W. E. Hatch of Duluth has been appointed physician in charge of the venereal clinic at St. Mary's Hospital to follow Dr. O. A. Oredson, who recently resigned.

Dr. R. J. Josewski, who has served as an intern at the Ancker Hospital, St. Paul, is now practicing medicine as an associate of Dr. Demeter Kalinoff of Stillwater.

Dr. R. G. Andres, formerly of St. Paul, is now located for the practice of his profession in Spokane, Washington. His new address is 528 Fernwell Building, Spokane.

Dr. and Mrs. A. C. Heath and daughter Eve are in North Easton, Massachusetts, where they will spend several weeks as the guests of Mrs. Heath's mother, Mrs. J. B. Tarbox.

Dr. J. H. Wells, who for the past year has been a member of the staff of the Community Clinic of Rosemount, has taken over the practice formerly belonging to Dr. W. M. Dummer, Farmington.

Dr. F. G. Carter, who has been a member of the staff of the Ancker Hospital, St. Paul, for the past two years, is now associated in the practice of medicine with Dr. A. R. Colvin, 632 Lowry Building, St. Paul.

Dr. Eleanor Slater, who comes from Howard, Rhode Island, where she was a member of the staff of the State Hospital for Mental Diseases, has accepted a position on the staff of the State Hospital at Fergus Falls.

Dr. John J. Gelz, formerly of Richmond, who recently completed a post-graduate course in London and Paris in the treatment of the eye, ear, nose and throat, has located in St. Cloud for the practice of his specialty.

Dr. James B. Carey, Minneapolis, presented a paper on "The Diagnosis and Treatment of Pernicious Anemia" at the meeting of the Aberdeen, South Dakota, District Medical Society, held at Webster, South Dakota, recently.

Dr. John Anderson of the London School of Tropical Medicine, London, England, was a recent visitor at the Mayo Clinic, Rochester, stopping off on his way to Hong Kong, China, where he will take a chair in medicine at the University there.

Dr. R. A. Gowdy, Alexandria, will leave September 15 for Miami, Florida, where he will become associated with his brother, Dr. F. A. Gowdy, in the practice of medicine. Dr. P. E. Kierland, formerly of Harmony, will succeed Dr. Gowdy in his practice at Alexandria.

Dr. and Mrs. C. M. Jackson and daughters, the Misses Helen, Dorothy and Mary, Minneapolis, will leave this month for Washington, D. C., where Dr. Jackson, who is head of the department of anatomy, University of Minnesota, will spend his year's leave of absence as president of American Research in the Department of Medicine.

Dr. E. P. Lyon, dean of the medical school, University of Minnesota, together with Mrs. Lyon, will return from a trip to Europe the first part of September. Dr. Lyon attended a meeting of the Physiological Congress while in Edinburgh, Scotland, following which he and Mrs. Lyon made a tour of Scotland, England, Norway, Sweden and Denmark.

Dr. M. George Milan of Thief River Falls was elected president of the Minnesota Sanatorium Association at a meeting held in Wadena the latter part of July. Other officers elected were: First vice-president, Dr. L. G. Guyer, St. Paul; second vice-president, Dr. Harry Bendes, Minneapolis; secretary, Beatrice E. Lindberg, St. Paul.

Word has been received of the marriage of Dr. E. C. Joseph, formerly of the Mayo Clinic, Rochester, to Miss Louise Fineman, sister of Dr. S. Fineman of Rochester, which took place at the home of the bride's parents in Minneapolis, July 23, 1923. Following a wedding trip through the East, Dr. and Mrs. Joseph will be at home in New Zealand, where Dr. Joseph will practice surgery.

Dr. G. T. Nordin has returned to Minneapolis following a six weeks' course of study in Chicago under the tutelage of Dr. Edward S. Blaine regarding methods in x-ray diagnoses. Dr. Nordin also visited the deep x-ray therapy clinics of North Chicago and Mercy Hospitals, as well as Battle Creek Sanatorium, before returning home. Dr. Nordin has charge of the newly completed x-ray department at the Swedish Hospital, Minneapolis.

Dr. F. L. Bregel of Fairfax has disposed of his practice to Dr. William Dummer of Farmington and will spend a short time at the Mayo Clinic, Rochester, before taking up surgical work as an associate of Dr. O. H. Ternstrom at St. James. Dr. Bregel recently received notice from the national headquarters of the American Red Cross at Washington, D. C., that he had been awarded the Serbian Order of St. Sava for services to that country during the war.

The campaign for the proposed thousand dollar Midway Hospital to be erected on the site bounded by University

Avenue, St. Anthony Avenue, Aldine Street and Pierce Street, St. Paul, is now well under way. It is planned to have special departments in General Surgery, Medicine, Obstetrics, and Children's Diseases, with laboratories of Pathology, Blood Chemistry, Basal Metabolism. Sereology, Electro-Cardiography, X-Ray and Radium. Mr. H. H. Bigelow, 516 North Prior Avenue, St. Paul, is general chairman of the campaign for raising funds to establish the new hospital.

A course of lectures on Physio-Therapy, to be given by Dr. C. M. Sampson, will be held in Minneapolis, September 17 to 21, inclusive. There will be ten lectures, two lectures each day, 9 to 12 A. M. and 2 to 5 P. M., Monday to Friday, inclusive. One evening lecture will be given during the week at which will be shown a 6,000-foot moving picture film demonstrating physio-therapy work and technic as employed in the U. S. P. H. S. hospitals.

Dr. Sampson was formerly chief of physio-therapy service in the U. S. Army General Hospital, Lakewood, New Jersey, and later Reconstruction Officer, U. S. P. H. S. Hospitals, Fox Hills, Staten Island, New York. He is the author of a new work of over four hundred pages entitled "Physio-Therapy Technic." Dr. Sampson will pay especial attention to diathermia and ultra-violet light in his lectures.

Attendance to these lectures is to be restricted to ethical medical men, or their assistants where properly vouched for. The fee for the course will be twenty-five dollars. Anyone desiring to enroll for the course or to obtain further particulars should communicate with the Pengelly X-Ray Company, 220 La Salle Building, Minneapolis, Minn.

MINNESOTA STATE BOARD OF HEALTH ITEMS

The Division of Child Hygiene under the direction of Dr. E. C. Hartley has secured the full time assistance of Dr. Ruth Boynton through the courtesy of the University Health Service and the Medical School for the purpose of conducting a survey of the mid-wife situation in Minnesota, with statistical studies of records of births and maternal and infant deaths. The mid-wife situation has been investigated in the Twin Cities, the northeast, eastern and southwest sections of the state, and will be completed in the areas outside those mentioned some time this month. A request has been made that physicians and health officers who know of mid-wives, licensed or otherwise, send in information at once to the Division of Child Hygiene, University Campus, Minneapolis. A full report of the work done will be given at the annual meeting of the Minnesota State Medical Association in October.

The annual meeting of the Minnesota State Sanitary Conference will be held at the time of the Minnesota Educational Association's annual session in St. Paul this year. Dr. George S. Wattam, Warren, is president of the Conference, and Dr. O. W. Parker, Ely, vice-president. A complete program for this meeting will be published in the October issue.

The annual meeting of the Minnesota Public Health Association will be held Wednesday, October 31, 1923, in St. Paul.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

ARLINGTON CHEMICAL CO.:

Pollen Extracts-Arlco: Arizona Ash; Arizona Cottonwood; Arizona Walnut; Bermuda Grass; Burr Ragweed; Burroweed; California Mugwort; Carelessweed; Carpet Sage; Greasewood; Hill Sage; Johnson Grass; Mexican Tea; Mountain Cedar; Orach; Pigweed; Prairie Ragweed; Russian Thistle; Sage Brush; Sea Blite; Shad Scale; Western Ragweed; Wild Sunflower.

LEDERLE ANTITOXIN LABORATORIES:

Pollen Antigens-Lederle: Annual Salt Bush; Bermuda Grass; Cocklebur; Johnson Grass; Mountain Cedar; Mugwort; Oak; Orchard Grass; Perennial Rye Grass; Rabbit Bush; Redroot Pigweed; Russian Thistle; Spiny Amaranth; Yellow Dock.

NATIONAL ANILINE CHEMICAL CO.:

Scarlet Red Medicinal—"National."

PARKE, DAVIS & CO.:

Protein Extracts Diagnostic-P. D. & Co.: Almond; Apple; Asparagus; Banana; Barley; Bean (Lima); Bean (Navy); Bean (String); Beef; Beef Serum; Beet; Blackberry; Black Pepper; Black Walnut; Bluefish; Brazil Nut; Buckwheat; Butternut; Cabbage; Cantaloupe; Carrot; Cat Hair; Cattle Hair; Celery; Cheese; Cherry; Chestnut; Chicken; Clam; Cocoa; Codfish; Coffee; Corn; Crab; Cucumber; Dog Hair; Duck; Duck Feathers; Egg (all proteins); Egg White; Egg Yolk; Eggplant; English Walnut; Fig; Garlic; Ginger; Goose; Goose Feathers; Grapefruit; Guinea-hen; Guinea-pig Hair; Haddock; Halibut; Herring; Hickory Nut; Horse Hair; Horse Serum; Juniper Pollen; Lamb; Lemon; Lettuce; Lobster; Mackerel; Milk (Cow's); (all proteins); Milk (Human); Mugwort (wormwood) Pollen; Mustard; Mutton; Oat Pollen; Orris Root; Oatmeal; Onion; Chicken Feathers; Orange; Oyster; Parsnip; Pea; Peach; Peanut; Pear; Pecan; Pepper (Sweet); Perch; Pike; Pineapple; Paprika; Plum; Pork; Prune; Potato (Sweet); Potato (White); Pumpkin; Rabbit Hair; Radish; Ragweed; Raspberry; Red Pepper; Redtop Pollen; Rhubarb; Rice; Russian Thistle Pollen; Rye; Rye Pollen; Sage; Salmon; Scallop; Shad; Sheep Wool; Shrimp; Smelt; Sole; Spinach; Squab; Squash; Strawberry; Tea; Timothy Pollen; Tomato; Turkey; Turnip; Veal; Watermelon; Wheat.

RADIUM EMANATION CORPORATION:

Radium Emanation (Radium Emanation Corporation).

E. R. SQUIBB & SONS:

Pollen Protein Allergens-Squibb; Ash; Hickory; Honeysuckle; Maple; Oak; Pine; Poplar.

Animal Epidermal Extract Allergens-Squibb: Beaver Fur; Chamois Skin; Civet Cat; Fox Fur; Kolinsky Fur; Leopard Fur; Mink Fur; Muskrat Fur; Mole Fur; Opossum Fur; Persian Cat (Angora) Fur;

Pony Fur; Raccoon Fur; Seal (Alaskan) Fur; Seal (Hudson) Fur; Sheep's Wool; Skunk Fur; Squirrel Fur.

Food Allergens-Squibb: Apricot; Butterfish; Cocoa; Cocoanut; Cottonseed; Duck; Fig; Flaxseed; Ginger; Goat; Guinea-hen; Hay (Alfalfa); Huckleberry; Lemon; Olive (ripe); Paprika; Pineapple; Pheasant; Pumpkin; Rabbit; Scallop; Sea-bass; Smelt; Sole; Tea; Tobacco; Vanilla; Whiting; Yeast.

WINTHROP CHEMICAL CO.:

Elixir of Luminal.

Sofos.—A mixture of sodium dihydrogen phosphate and sodium hydrogen carbonate (sodium bicarbonate), rendered stable by coating the particles of one of the constituents with disodium hydrogen phosphate. One part of sofes has the same phosphate value as 1.75 parts of sodium phosphate U. S. P. When sofes is treated with water, sodium phosphate (Na_2HPO_4) is formed and carbon dioxide is set free. Sofes has the physiologic action of sodium phosphate. It differs from the effervescent sodium phosphate preparations in that it is free from citrate or tartrate. General Chemical Co., New York.

Pollen Extracts-P. D. & Co.—Liquids obtained by extracting the proteins from the dried pollen of various species of plants. The products are standardized in "units," a unit being the extractive obtained from 0.002 mg. of pollen. For a discussion of the actions and uses of pollen preparations, see Pollen and Epidermal Extract Preparations and Biologically Reactive Food Proteins, New and Non-official Remedies, 1923, p. 234. These preparations are marketed in packages for diagnostic use and in packages intended both for diagnostic use and for treatment. The following preparations are marketed: Pollen Extract Ragweed-P. D. & Co. and Pollen Extract Timothy-P. D. & Co. Parke, Davis & Co., Detroit. (Jour. A. M. A., July 7, 1923, p. 27.)

Pollen Extracts-Arlco are marketed in sets of five vials representing graduated concentrations; also in concentrated solution in capillary tubes for diagnostic test. Arlington Chemical Co., New York. (Jour. A. M. A., July 23, 1923, p. 299.)

Sulpharsphenamine-Billon.—A brand of sulpharsphenamine-N. N. R. (see Jour. A. M. A., March 31, 1923, p. 919). It is marketed in ampules containing, respectively, 0.1 gm., 0.2 gm., 0.3 gm., 0.4 gm., 0.5 gm. and 0.6 gm. Powers-Weightman-Rosegarten Co., Philadelphia.

Radium Emanation (Radium Emanation Corporation).—The emanation, mechanically removed from a solution of a radium salt, in admixture with inert gases. It is supplied in sealed glass capillary tubes; each tube accompanied by a statement of the amount of radium emanation in terms of millicurie contained in it at the time of sale. The radiation from radium emanation as a therapeutic agent is analogous in all respects to that from radium and its salts, except that the activity decreases rapidly (see Radium and Radium Salts, New and Non-official Remedies, 1923, p. 255). The intensity of radium emanation decreases rapidly through decay (at the rate of about three-fourths per cent per hour). Radium Emanation Corporation, New York. (Jour. A. M. A., July 21, 1923, p. 213.)

PROPAGANDA FOR REFORM

Toxicity of Carbon Tetrachlorid.—Experiments on dogs demonstrated that large doses of carbon tetrachlorid produced degenerative changes in the liver and kidney of these animals. In view of these findings and the experience of Lambert, it would appear advisable that the dose of carbon tetrachlorid be reduced in routine treatments. (Jour. A. M. A., July 7, 1923, p. 47.)

The Dreyer Tuberculosis Vaccine.—Newspapers have carried extended notices of the Dreyer so-called "defatted" tuberculosis vaccine. The experiments of Professor Dreyer of the Department of Pathology of Oxford University depend on the production of an antigen preparation from tubercle bacilli which are previously deprived of their waxy envelope by treatment with a formaldehyde solution. Animal experiments and some clinical trials have been reported which give ground for the hope that the new antigen may prove of value. Professor Dreyer's work does not offer sufficient evidence to warrant the conclusion as yet that any marked improvement has been made in the treatment of tuberculosis. (Jour. A. M. A., July 14, 1923, p. 138.)

Another Electronic Diagnosis and Treatment.—A report on the case of Mr. D., who was treated for carcinoma by C. E. Phelps, M.D., an Abrams disciple of Hartley, Iowa, is of interest because it represents, undoubtedly, what is duplicated in hundreds, if not thousands, of cases, in various parts of the country. The clinical report is by Dr. E. E. Munger of Spencer, Iowa, and the pathological report was made by Dr. E. R. LeCount of Chicago. Briefly, it is the story of a man in his seventies suffering from inoperable carcinoma of the stomach with implanted metastasis on various other abdominal organs. Dr. Munger diagnosed the condition when the patient first came to him. The diagnosis was verified at the Mayo Clinic. Then the man began taking the "Abrams Treatment." He was led to believe that he was being rapidly cured and was finally told that "everything had cleared up except a trace of colicsepsis." A month later he died. (Jour. A. M. A., July 28, 1923, p. 317.)

Ethyl Chlorid as a General Anesthetic.—The published mortality rate from ethyl chlorid anesthesia varies from 1 in 15,000, which is also the mortality rate of ether anesthesia, to about 1 in 6,000. From these statistics, therefore, one might judge that ethyl chlorid stands between ether and chloroform; but it is probably closer to the latter, which gives a mortality of about 1 in 3,500. Ethyl chlorid, however, is used for minor anesthesia, and it is unfair to compare it with the major anesthetics for prolonged operations. The fair comparison for ethyl chlorid is with nitrous oxid, the accepted mortality rate from which is about 1 death in 1,000,000 anesthetics. Hence, whether for induction of anesthesia or for minor anesthesia, ethyl chlorid is somewhere between 200 and 66 times more dangerous than nitrous oxid. It is, on the other hand, somewhat safer than chloroform. The essential danger from ethyl chlorid lies in the suddenness of the death, which may occur within half a minute from the beginning of the inhalation. The danger signs are such as may be overlooked by any but the most experienced anesthetist. (Jour. A. M. A., July 28, 1923, p. 320.)

PROGRESS

Abstracts to be submitted to Section Supervisors.

MEDICINE

SUPERVISORS:

F. J. HIRSCHBOECK,
FIDELITY BLDG., DULUTH
THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

THE SPONTANEOUS VARIABILITY OF BLOOD PRESSURE, AND THE EFFECTS OF DIET UPON HIGH BLOOD PRESSURE, WITH SPECIAL REFERENCE TO SODIUM CHLORIDE—Mosenthal and Short (Amer. Jour. of Med. Sc., April, 1923): The blood pressure readings in an individual vary considerably from time to time, and the observer must be familiar with the rise and fall of blood pressure readings that apparently occur in spontaneous fashion through changes in the emotional state of the patient. Before an accurate estimate can be made the psychic element must be eliminated. This has been emphasized in the past by various observers—Rolleston, Janeway and others. Tixier, in fact, made the observation that it was rare for the blood pressure readings to remain stationary as long as five minutes.

The authors made their investigations at the Vanderbilt Clinic, and it was noted that with rest there was nearly a constant tendency for the systolic pressure to fall, and in more marked degree, comparatively, than the diastolic pressure. Emotional stimuli, in their investigations, reveal a constant rise, to drop again in a few minutes when the emotional phase has passed away. The mechanism of this instability, according to Cannon, is due to the energy of the heart as measured by the volume of blood pumped into the arterial system, and the degree of resistance present in the terminal portion of the circulation.

There is a tendency for many writers to believe that there is an influence on the blood pressure through protein feeding. Publications advancing this theory have based their data chiefly upon general impressions and not upon properly obtained statistics.

Squirc and Newburgh came to the conclusion that high protein diet over a short period had no effect on blood pressure. Their study included cases of essential hypertension as well as nephritis. The protein given was over 150 gms. per day, and signs of renal irritation appeared, but no alteration in the blood pressure.

The eminent Allbutt again and again placed patients with high blood pressure on a purin free diet, with no appreciable reduction in the blood pressure, and it has been pointed out by Williams that the height of the blood pressure bears no relationship to the amount of non-protein nitrogen in the blood.

The authors believe that the indiscriminate use of a carbohydrate diet in patients with high blood pressure has a tendency for the development of obesity and hypertension as a possible penalty.

Special mention is made in the article relative to the influence of sodium chloride on high blood pressure. In answer presumably to Allen's article in 1920, advocating salt restriction in the treatment of hypertension, they again

quote Allbutt, who found that cutting out salt from the diet of healthy persons for a few days produced no change in the pressures. McLester and Christian's work is quoted as contradictory to the work of Allen. The writers found that in only 2 out of 26 cases of hypertension was there a high chloride content in the blood. They believe this observation bears out the fact that hypertension and increased blood chloride do not go hand in hand.

In their experimental work to note the influence of the ingestion of rather large doses of salt on patients in influencing hypertension, they brought about as nearly as they could a minimal rate of pressure on the patients by rest and freedom from activity and emotional excitement. With the administration of sodium chloride in these patients in large doses, no influence was noted unless renal, cardiac or cerebral complications had occurred, which clinically contraindicate the use of sodium chloride, and in which in one instance at least produced alarming symptoms.

F. J. HIRSCHBOECK.

FURTHER OBSERVATIONS ON THE USE OF HIGH FAT DIETS IN THE TREATMENT OF DIABETES MELLITUS—L. H. Newburgh and P. L. Marsh (Arch. Int. Med., April 15, 1923): This latest report of the Michigan investigators on the use of a high fat, low protein, low carbohydrate diet in diabetes seems to confirm the good results reported by them in their earlier communications. They have now had an opportunity to study 190 cases treated by this method since its introduction in 1918.

In the present analysis, the writers have attempted to answer certain fundamental questions: (1) whether this type of diet fulfills the requirements of the disturbances in metabolism present in diabetes; (2) whether there are any definite advantages in their higher caloric diet as compared with the older undernutrition method; (3) whether the advantages, if present, are at the expense of increasing the downward progress of the disease.

In attempting to answer the first question, they report the effects of their diet (*a*) on glycosuria, (*b*) on acidosis, (*c*) on nitrogen balance, (*d*) on lipemia.

Glycosuria.—They were able to observe 176 cases for a satisfactory length of time. None failed to become sugar-free and all were discharged aglycosuric and on a maintenance diet. They cite several cases in which a severe undernutrition diet failed to relieve the glycosuria, and which responded to the high fat method. *Acidosis*.—Every patient, regardless of the severity of the diabetes or degree of acidosis, was placed on the diet. In no case did acidosis of any degree develop. They cite several records in which an acidosis already present disappeared on high fat diet. *Nitrogen Balance*.—They have been able to satisfy the nitrogen requirement without producing glycosuria. *Lipemia*.—They demonstrate that hyperlipoidemia is not produced by the high fat diet, and further that an existing increased lipemia gradually falls to normal under this diet.

The advantages of the high fat, maintenance diet over the method of undernutrition are very definite. The exhaustion and extreme weakness associated with the undernutrition method are done away with. Instead of the diabetic becoming incapacitated and unable to lead an active life, their patients have been able to return to their former occupations.

The writers are very conservative in their statements as to whether these advantages may not be at the expense of increasing the progress of the disease. They seem to have evidence, however, which indicates that the prognosis by their method is no worse, at least, than that by any other diet. They derive their evidence (1) by a study of the effect of this diet on the carbohydrate tolerance and (2) by a comparison of the duration of life in their series with other series reported. They have seen no case in their series in which there was a reduction in tolerance. The comparison of their statistics as to duration of life with others indicates that there is no shortening of life under the high fat, low protein, low carbohydrate diet. This method, then, does not seem to be attended by any increased progress of the disease.

M. H. NATHANSON, M.D.

EPILEPSY AND GUNSHOT WOUNDS OF THE HEAD—William Aldren Turner (Jour. of Neur. and Psych.): The author cites statistics from the American Civil War giving 13.7 per cent as the incidence of epilepsy, following injury. In the Franco-Prussian War, 4.3 per cent developed this complication. Holmes and Sargent are reported by him to have investigated 610 cases between two and eighteen months after the infliction of the wounds. They found 6 per cent suffering from compulsive seizures.

The British Ministry of Pensions Reports would show that, since the armistice, less than 5 per cent of 18,000 cases of gunshot wound to the head developed epilepsy.

Rawling is quoted, however, to have found 25 per cent of 452 cases of all varieties of gunshot wound of the head to have developed fits.

Turner suggests that the incidence of epilepsy has been underestimated.

The reviewer can subscribe to this opinion. It was found by him that a series of 100 cases gave 36 per cent which developed epilepsy. This review was made approximately four years after the wounds were inflicted.

Turner discusses the various types, causation, prognosis and treatment. Surgery in the old cases is treated at some length. Operative interference is not given much encouragement.

Tables of 48 cases are presented, giving the date of injury, subsequent condition of the wound, paralytic or other symptoms, as well as the onset character and course of epileptiform seizures.

J. C. MICHAEL.

**THE DIAGNOSIS AND TREATMENT OF INTES-
TINAL OBSTRUCTION**—Alexius McClannan (Amer. Jour. of Med. Sc., June, 1923): Acute intestinal obstruction with attendant toxemia is the most fatal of all acute abdominal conditions. The advent of aseptic surgery and improved technique had little influence on the mortality statistics and any further improvement will have to be accomplished by operation at an earlier stage of the condition rather than in any technical procedure subsequent to its development.

More serious symptoms are due to the absorption of toxins from the obstructed bowel, and the term ileus has been used to designate the series of symptoms due to the

toxemia and the efforts of the gastro-intestinal organs to overcome the obstruction. In the event of vascular disturbance in the intestinal wall the intensity of the toxemia is very much greater. If the underlying cause of the obstruction can be recognized and removed early in the disease the severity of the toxic symptoms are diminished or their development is prevented. This is exemplified in early operations for strangulated hernia where the irreducible external swelling immediately centers the attention to the obstruction and brings the patient to immediate operation.

Characteristic symptoms at the onset are pain, constipation or diarrhea, and vomiting. The pain is paroxysmal in type with free intervals, and extremely severe, not relieved by vomiting, defecation, or even with the administration of opium. The constipation is oftentimes resistant to all treatment and the diarrheal condition may be associated with the passage of blood and mucous. The vomiting is of the classic, obstructive type, first gastric, later bilious, and finally intestinal. The blood pressure falls as the symptoms develop, indicating the onset of intoxication. As the condition progresses the pain becomes more intense unless gangrene develops, in which event it may be diminished. Vomiting is intestinal in type and the fluid is thin, acrid, voluminous and irritating. Peristalsis may be noted in the coils of the intestine. The distension, although at first regional, usually becomes general. In the later stages, gangrene of the bowel ensues, peritonitis, alteration of the function of the liver and kidneys, resulting in ultimate collapse from the toxemia and malfunction of the kidneys and liver.

Laboratory studies usually show a marked leukocytosis. The non-protein nitrogen of the blood is increased materially in the later stages. The urine shows albumin and casts frequently, and indol and skatol derivatives.

McGlannan mentions the various conditions which must be differentiated from intestinal obstruction and calls attention to the abdominal symptoms of thoracic disease, the crises of tabes, visceral crises of angioneurotic edema, acute dilatation of the stomach, adrenal disease, spastic ileus, mesenteric vascular occlusion, acute pancreatitis, ruptured abdominal viscus, torsion of a pedicled tumor, the onset of appendicitis, of cholecystitis or kidney colic, and peritonitis.

The treatment advised by McGlannan consists of the following measures: Enema should be given by a competent person and the stomach emptied by lavage. If there is no relief with these measures, an obstruction of the bowel is likely. After an hour these measures should be repeated, and if there is no change in the patient's condition, or the second lavage brings away duodenal contents, the diagnosis is more certain. In eighteen cases of post-operative intestinal obstruction, operation was performed after the diagnosis had been made on these symptoms. In every case a mechanical obstruction was found and relieved, and all these patients recovered. Corroborative evidence may be furnished by a rise in the quantity of non-protein nitrogen of the blood with tests made at four hour intervals. Cathartics and opiates should not be employed, but yet, in contradiction, the writer says that cathartics or opium may be used in the early stages in the period of doubt in the belief that it would aggravate the symptoms in existing obstruction and relieve the symptoms of a benign condition.

F. J. HIRSCHBOECK.

SIGNIFICANCE OF THE WILDBOLZ AUTO-URINE REACTION IN TUBERCULOSIS, WITH REPORT OF 100 CASES—Milton Smith Lewis (*Amer. Jour. of Med. Sc.*, June, 1923): Wildbolz and his co-workers assume that when there is an active tuberculous process in the body, products of disintegration due to the tubercle bacilli are eliminated by the various secretory organs, and that there should be antigens excreted in the urine which if injected intracutaneously cause a certain definite type of reaction similar to that after the injection of tuberculin. A negative test indicates no area of activity in the body. Wildbolz stated that the above reaction does not occur in healthy individuals or in the urines of persons with tuberculous processes that have healed. In view of the fact that all of the tests for the activity of tuberculosis have been disappointing, Lewis performed the auto-urine test on 100 subjects in an effort to establish its value.

In summarizing his results it was noted that in 44 cases of active tuberculosis, 26 resulted in a positive reaction and 18 in a negative reaction. In 4 inactive or arrested cases, 3 were reported as positive and 1 negative to the auto-urine test. In 24 non-tuberculous pulmonary conditions, 14 gave a positive reaction with the auto-urine test and 10 a negative reaction. Of 22 apparently healthy cases, and with various diseases outside of the respiratory tract, 11 gave a positive reaction and 11 a negative reaction.

The writer concludes therefore that healthy persons and persons afflicted with non-tuberculous disease may show a positive reaction as well as persons with healed tuberculous processes. When contrasted with the tuberculin test the results were extremely variable, and Lewis believes that positive result is not proof that there are antigens in the urine. The writer deprecates its use, as it has diagnostically little significance and it is not practical for everyday use.

F. J. HIRSCHBOECK.

TOLYSIN IN ACUTE RHEUMATIC FEVER AND OTHER CONDITIONS—Barbour, Lozinsky and Clements (*Amer. Jour. of Med. Sc.*, May, 1923): Tolsin has received recognition recently as an improvement over the salicylates in acute rheumatic fever and other conditions. It appears to be innocuous in large doses, and is less irritating than cinchophen or the salicylates.

The observers treated patients with acute and subacute rheumatic fever and other cases of arthritis, and also made observations on tolsin as an antipyretic and analgesic. In twelve cases of rheumatic fever it was found to be a very efficient therapeutic agent. The usual dose required for the complete relief of symptoms was 10 to 16 gms. As a satisfactory routine, they suggest giving 2 gms. every two hours for three doses, followed by 2 gms. every four hours. No gastric symptoms were elicited, and albuminuria was increased in only one case.

Testing out the toxicity, two different patients received 50 gms. of tolsin within eight days without any untoward symptoms whatever. In six patients out of seven with arthritis of other types satisfactory results were obtained. In acute tonsillitis it was found to have a good antipyretic action, and in ordinary colds and headaches it appeared to

act as well as aspirin, but more slowly, and with an indication for somewhat larger doses.

The report of the authors would suggest its use as a substitute for salicylate medication, particularly in acute rheumatic fever.

F. J. HIRSCHBOECK.

TOXIC POLYNEURITIS—Wilfred Harris (Brain, Vol. XLV, Parts III and IV): In this contribution the author dwells particularly on the etiology of the lesser known types, many of which have an obscure origin. An etiological rather than a pathological classification representing the present state of our knowledge is indicated as follows:

(1) Those dependent on the absorption of poisons introduced primarily within the body.

(2) Those due to autotoxaemia, or to poisons developed primarily within the body.

(3) Those due to infections of an organismal nature.

(4) Those occurring in cachectic states.

Attention is called to the fact that the term toxic polyneuritis is employed most frequently when the infective or toxic agent is not clearly established.

The less common causes mentioned, with case reports, are:

1. Silver
2. Carbon bisulphide
3. Carbon monoxide
4. Rheumatic polyneuritis
5. Chloretone
6. Septicemic
7. Typhoid
8. Acute febrile form
9. Syphilitic
10. Tubercle
11. Leukaemic
12. Carcinomatous
13. Autotoxemic
14. Beri-beri
15. Puerperal
16. Haematoporphyritic

This latter form is discussed at some length. The factor of sulfonal and also trional medication prior to the onset of this type is brought out as the probable causative factor in case reports.

J. C. MICHAEL.

SURGERY

SUPERVISORS:

E. MENDELSSOHN JONES,
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DOUBLE KIDNEY (CONTINUED)—Daniel N. Eisen-drath (Ann. of Surg., Vol. 77, No. 5): In 80 clinical cases of double kidney which have been collected, the incidence of different diseases for which operation was performed is about the same as one expects to find in single kidney cases. (A table is given.)

Preoperative diagnosis was made in 32 (40 per cent) of the 80 collected cases. Pyelography and opaque catheters were used in 23 cases; in 7 cases observation revealed two ureteral orifices on one or both sides of the bladder; in 2 cases it was noted that alternately clear and turbid urine was obtained by the use of ureteral catheters.

A specific diagnosis of double kidney is dependent upon the following data:

1. The finding of two ureteral orifices on one or both sides of the bladder.

2. The presence of an ectopic orifice or other form of ending of one or both ureters of a double kidney.

3. Alternate clear and turbid urine obtained from one kidney.

4. Ureteropyelography if only one ureteral orifice is present on each side.

A communication may exist between the two ureters or renal pelves, and is important in diagnosis and treatment.

Treatment.—The same principles are used in treating diseases of double kidney as those used in cases of diseased single kidney.

Heminephrectomy should be done if possible. Whether this can be performed depends on the blood supply of the remaining half and the possibility of separating the diseased half and its ureter from the normal half.

There are three types of blood supply, namely:

1. A single artery and accompanying vein for both halves.

2. Artery and vein for each half, one of which arteries may be an accessory vessel.

3. Multiple arteries for both halves.

In 35 cases recorded, the following was found:

1. One artery for both halves—15 (43%).

2. One artery for each half—15 (43%).

3. Three arteries for both halves—5 (14%).

Before a heminephrectomy is decided upon the pedicle must be exposed to see if a sufficient blood supply can be left for the remaining half.

There are certain conditions which indicate primary complete nephrectomy.

1. Infection, especially hematogenous involving both halves of the kidney.

2. Tuberculosis or malignant neoplasms, unless there is a complete separation of the two halves.

3. Communication between the two pelves or impossibility of separation of the pelves.

4. Impossibility of separation of ureters if they lie in one sheath.

5. Advanced disease of both halves.

Many cases of the 80 reported in the literature should have had a heminephrectomy instead of complete primary nephrectomy. Fifteen cases of the 80 had a primary heminephrectomy, and of these three were followed by removal of the remaining half. It is probable that a number of these cases had to be operated on again later.

Groups of tables are given in this article, which contain all the available information in the reported cases.

WILLIAM P. HERBST.

PRIMARY CARCINOMA OF THE MALE URETHRA—Herman L. Kretschmer (Arch. of Surg., May, 1923): Carcinoma of the male urethra is a rare disease. Eighty

cases are reported in this article, forty-two of which have been reported previously.

One of the author's own cases, which is reported, is of especial interest in that it was a papillary carcinoma, which is a very unusual type of growth in the urethra. In this case there were also many benign papillomata studding the urethra.

Primary carcinoma of the male urethra is classified as follows:

1. Squamous-cell carcinoma.
2. Columnar-cell carcinoma.
3. Papillary carcinoma.
4. Adenocarcinoma.

The squamous cell growth occurs most frequently, and 55 of the 80 reported cases were of this type.

Adenocarcinoma originates in Cowper glands, with later invasion of the urethra.

Like other carcinomata, carcinoma of the urethra occurs most frequently in patients of advanced age. Eighteen of the cases reported occurred in the fifth decade; the youngest was 39 years of age, and the two oldest were in the seventh decade.

Stricture is mentioned as a possible etiological factor. Also, previous venereal disease and trauma (mechanical or chemical) are given as factors in the etiology.

The symptoms of this disease are divided into four stages, as follows:

1. Symptoms of stricture with urethral discharge.
2. Local tumor.
3. Infection with formation of periurethral abscess. The malignant nature of this condition can be readily overlooked if seen in this stage.
4. Fistula formation, usually on under surface of penis, but may be found on any surface.

Treatment.—Amputation of the penis, with transplantation of the urethra following complete extirpation of the inguinal glands, is the preferred method of treatment.

Radium is used with value if the diagnosis is made when the tumor is small, and before there is involvement of the regional lymph glands.

The last report from the author's patient was received two years after operation, and there had been no signs of recurrence as yet.

WILLIAM P. HERST.

PEDIATRICS

SUPERVISORS:

FREDERICK C. RODDA,
CHILDREN'S CLINIC, MINNEAPOLIS

ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

THE ANEMIAS OF INFANCY; CAUSES AND TREATMENT—Charles Herrman (Arch. of Ped., June, 1923): The function of the blood forming system is two-fold, blood production and blood destruction. In order to include the latter, Krumbhaar has suggested the term hemolyto-poietic system. The organs or structures making up this system are the bone marrow, spleen, liver, lymph nodes, the reticulo-

endothelial system. The chief function of the bone marrow appears to be the production of red blood cells, polynuclear leucocytes and platelets; that of the lymph nodes, the production of lymphocytes. The chief function of the spleen is apparently to take up effete material, more especially degenerated, useless red blood cells.

The appearance of unusual forms of blood cells has not the great significance which it has in later life; the presence of normoblasts and megaloblasts does not justify a diagnosis of pernicious anemia, nor the appearance of young forms of white cells that of leukemia.

Among the chief agents acting from without is improper feeding, primarily a too exclusive milk diet. Repeated mild infections, of which those of the rhinopharynx are in infants the most common, play an important part in producing and in increasing an already existing anemia. A very large percentage of all anemic infants show rachitic manifestations.

Many European authors, more especially the French, believe that most of the severe secondary anemias of infants, which are associated with an enlarged spleen, are due to syphilis. We may briefly consider the two important clinical types. First, in the simple anemia, there is a yellowish pallor, so that the mothers often bring babies with the statement that they are yellow rather than pale. The severe type of secondary anemia, the so-called von Jaksch's anemia, or anemia pseudoleukemica infantum, is usually seen in infants toward the end of the first year of life. They present a marked waxy pallor of the skin, and pale mucous membranes; they may also show slight edema.

Pernicious anemia is exceedingly rare in infants. Acute lymphatic leukemia occurs in infants, but the blood picture is entirely different. Chronic lymphatic leukemia is exceedingly rare in infants.

Prognosis.—Barring intercurrent infections, especially those of the upper respiratory tract, the prognosis even in the severe type is not unfavorable. On account of the great danger following such infections, home treatment is preferable to hospital treatment. Most of the deaths are due to pneumonia, so that every possible precaution should be taken to prevent contact infection with those diseases, measles, influenza, whooping-cough, in which the lungs are often affected.

Treatment.—If the patient is rachitic, exposure to sunlight, and the administration of cod-liver oil and phosphorus, are indicated; if syphilitic, salvarsan and mercury are given. Foci of infection should be removed. Breast milk should be procured if possible. The dietetic treatment is most important. Beef juice, vegetable and fruit juices should be added early to the diet. Iron is especially valuable in the patients whose blood is of the chlorotic type, as it acts primarily by stimulating the bone marrow. The saccharated carbonate is as valuable as the newer preparations. Some patients do better with a combination of iron with arsenic. In a few cases which fail to respond to iron and arsenic, small doses of thyroid extract may be tried. Transfusion is indicated in some cases.

Splenectomy finds its greatest usefulness in those forms of anemia with increased blood destruction, notably in hemolytic anemia. The removal of the spleen appears to have a stimulating effect on the bone marrow. In cases where the removal of the spleen is considered, the following course should be pursued: A transfusion should be given. If

after ten to fourteen days the blood returns to its previous condition, a second transfusion should be given. If after fourteen days there is again a return to the low hemoglobin percentage and red blood count, splenectomy, preceded by a transfusion, should be advised.

R. N. ANDREWS.

CAUSES OF INTRACRANIAL HEMORRHAGE—

Ogden F. Conkey (Arch. of Ped., April, 1923): Intracranial injury accompanied by hemorrhage is one of the most frequent causes of stillbirths and death of the new-born. A most notable feature in the consideration of these deaths is that a large percentage of the infants showing intracranial hemorrhage are *premature*.

Rodda, who has made very complete studies of the coagulation and bleeding times in the new-born, states that more than 25 per cent of infants afflicted with cerebral hemorrhage show hemorrhages in other parts of the body.

With all respect for the work which has been done in this connection, the author believes there is some danger of overstressing the hemorrhagic disease theory to the exclusion of the mechanical and traumatic factors that are present in both spontaneous and operative deliveries. Hemorrhagica neonatorum must not become a cloak to cover up birth injuries which accompany obstetrical efforts.

Writing on the subject of birth traumatism of the brain, P. Schwartz reports in 65 per cent of all new-born dying within the first five months he found effects of birth trauma, indicated by hemorrhages and softening that could be discerned with the naked eye.

Of the mechanical factors concerned in the production of lacerations of the dura, falx, and tentorium, lateral compression of the skull with overlapping of the parietal bones is the most important.

Examination of hospital records shows that many cerebral hemorrhages occur in what were apparently short normal labors. Here it is believed that the head has been subjected to some sudden, severe pressure, such as might happen if it were forced quickly through an incompletely dilated cervix or rigid perineum.

The rôle played by asphyxia in the production of brain hemorrhages has been a much disputed one. Any number of causes may act to bring this about, such as pressure on the cord, decreased placental area due to a tonic uterus, or partial separation of the placenta associated with previa, infarctions, trauma, etc. It is not unreasonable to assume that some of the intracranial hemorrhages in Cæsarean babies are caused by asphyxia rather than hemorrhagic disease, and this would be more apparent if the indications for Cæsarean section were reported in all instances. Increased CO₂ in the blood is followed by engorgement and increased tension in the vessels. When this is extreme, rupture occurs in the terminal veins and arterioles.

Breech deliveries cause more intracranial injuries than any of the other complications of labor. It was formerly thought that most of these deaths resulted from asphyxia caused by pressure on the cord by the aftercoming head, but we now know that tentorial lacerations with hemorrhage are the lesions most often responsible.

Too vigorous methods of resuscitation should be mentioned prominently as a contributing etiological factor in

intracranial hemorrhage. The violent slapping and swinging of asphyxiated infants has hastened death in innumerable instances. The average case requires only a gentle friction of the skin with a towel or a few drops of water sprinkled on the chest. If artificial respiration is indicated, it can be carried out properly and efficiently without swinging or suspending the child by its feet with the head down. When asphyxia persists after the milder methods of resuscitation have been tried, one should realize that he is probably dealing with an intracranial injury. Any measures that increase cerebral congestion will only lessen the chances of recovery.

A better understanding and more skillful handling of the complications of labor will result in fewer birth injuries and hemorrhagic lesions of the brains.

R. N. ANDREWS.

OBESEITY IN CHILDREN (Medecine, Paris, August, 1922. Arch. of Ped., April, 1923): Apert comments on the light thrown on obesity by endocrinology, especially in children. Except in girls approaching puberty, obesity in children over 6 is abnormal, and requires treatment. But the mechanism varies in each case, and treatment must vary in consequence. As a rule, the obesity is the result of some upset in endocrine balance, and treatment must aim to restore the harmonious concerted action. This requires prudent guidance, as he shows by some typical examples. The big, active obese child should eat less meat and fats and make up with fruits and vegetables. The pale, languid obese child should be given substantial food in small compass; with iron and arsenic and organotherapy. Not the scales but the girth of the abdomen should be the guide here. Thyroid treatment, if needed, should be given very cautiously, only three times a week and in small doses, but it may have to be kept up a long time. He adds that the effect of any measures which cause rapid reduction in weight is only ephemeral, and it is obtained only at the expense of the general health. This is the case in children even more than in adults.

R. N. ANDREWS.

OXYGEN THERAPY IN PREMATURE BABIES WITH ANOXEMIA—Harry Bakwin (Amer. Jour. of Dis. of Children, February, 1923): By anoxemia is meant a condition in which the oxygen pressure in the systemic capillaries is abnormally diminished. Cyanosis is distinct evidence of anoxemia. It occurs frequently in premature babies and may be associated with a number of different conditions, such as cerebral hemorrhage, pneumonia, sepsis and atelectoses. In these babies cyanotic attacks start soon after birth and recur more or less frequently for several days. If the baby lives through this period the attacks usually cease. Death, however, is an all too frequent sequel. The cyanosis in premature babies is usually extreme and is accompanied, as in adults, by an increase in the oxygen unsaturation of the blood. During the cyanotic attack the respirations become progressively slower and finally cease. The heart also beats slower and becomes weaker; but it usually continues to beat for several minutes after respiration has ceased.

In small, frail babies full expansion of the lungs may be

delayed for several weeks. As a consequence, the blood flowing through the walls of the collapsed alveoli is poorly or not at all oxygenated, whereas in the expanded portion of the lungs the blood is normally arterialized. It is a matter of common clinical observation that the breathing in prematurely born infants is irregular both in rate and depth. Pembrey and Allen have shown that Cheyne-Stokes breathing may be abolished by giving oxygen, thereby proving, Haldane believes, that this type of breathing is due to oxygen want.

In prematurely born infants oxygen may be given effectively by means of two fine rubber catheters inserted into the nostrils. The catheters are well lubricated and connected to the oxygen tank by means of a Y tube. The oxygen may also be given through a rubber tube about 1 cm. in diameter, inserted into the mouth.

During the past three years a large number of cyanotic premature infants have been treated with oxygen inhalations. The response to the oxygen is usually prompt, and but a few minutes are necessary before the cyanosis disappears and the character of the respirations changes. It is difficult to gauge with any degree of accuracy the permanent value of oxygen to the babies. It did seem that, in general, when oxygen was administered early, the subsequent cyanotic attacks were fewer in number and more readily amenable to treatment.

R. N. ANDREWS.

BRAIN TUMOR IN YOUNG CHILDREN—Martha Wollstein and Frederic H. Bartlett (*Amer. Jour. of Dis. of Children*, April, 1923): In seven cases of tumor of the brain in children between the ages of 2 weeks and 3 years, the average age was 15 months. All the tumors were gliomatous in type. Two were supratentorial and five were infratentorial. Of the supratentorial tumors, one occupied the left cerebral hemisphere and was congenital in origin. The other occupied the basal ganglions. In the five infratentorial tumors the vermis of the cerebellum was involved. The growth involved the right cerebellar hemisphere in four and the left hemisphere in only one instance. The medulla and the pons were infiltrated in two cases, and the right cerebellopontile peduncle was involved in two instances. The upper cervical cord was compressed in three of the cases. Hydrocephalus was present in each of the seven cases. The most striking feature of the symptomatology is the variability in physical signs. Convulsions were absent in all cases except one in which a convulsion occurred just before death. Vomiting did not appear as a significant symptom in any of the cases. The spinal fluids showed nothing that is distinctive. Xanthochromia was present in only one case in which there was a cerebral hernia.

R. N. ANDREWS.

TUBERCULOSIS IN CHILDREN FROM THE STAND-POINT OF THE PEDIATRIST—Morse John Lovett (*Arch. of Ped.*, March, 1923): The author believes that the relative frequency of infection with the human or bovine type of organism is of no practical importance, as both must be guarded against. The relative frequency of infection through the respiratory and digestive tracts likewise is of little practical importance as both must be guarded against.

The Pirquet test is of great value in infants; it is of less value in older children because of the increasing frequency of infection with age. A negative test is of great importance as it practically rules out tuberculosis unless the child is overwhelmed with infection. It may be absent in acute miliary tuberculosis, in tuberculous meningitis and sometimes in tuberculous peritonitis. In the author's experience, tuberculosis is a rare disease in infancy and childhood, both in private and hospital practice. In 1921, in the Children's Hospital, Boston, the diagnosis of tuberculosis in any form was made less than 100 times in over 10 000 diagnoses in the Out-Patient Department. The preventive treatment is the most important. After the disease has developed, the treatment consists of rest, food, fresh air, both day and night, and all the sunlight possible. The Rollier treatment is very useful in bone and peritoneal tuberculosis; no confidence can be placed in drug treatment except for relief of symptoms; the writer has had no personal experience with tuberculin treatment, but had been disappointed in what he has seen of it.

R. N. ANDREWS.

GYNECOLOGY AND OBSTETRICS

SUPERVISORS:

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ALBERT G. SCHULZE,

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DRY LABOR—John Osborn Polak (*Amer. Jour. of Ob. and Gyn.*, May, 1923): The author groups his cases under three headings: first, premature ruptures of the membranes before labor with no pelvic disproportion; second, rupture of the membranes at the beginning of labor, cervix undilated, presenting part engaged, normal pelvis; third, dry labor, undilated cervix, minor degree of pelvic disproportion. It is generally admitted the condition adds to the maternal risk, from general and uterine exhaustion, trauma, possible operative interference and infection. The fetal mortality is always increased, due to various factors. The principal obstruction is an undilated cervix. While it is generally agreed the physiologic dilatation of the soft parts is preferable, artificial assistance is likely to be indicated in some of these cases. Polak describes the various methods which may be adopted. First, dilating bags are uncertain, may displace the presenting part or allow prolapse of the cord, and may predispose a contraction ring. Operative interference is much more frequent, hence there is added risk of infection or injury. Manual dilatation is usually associated with extensive laceration and frequently necessitates operative delivery. The use of morphine is of distinct value in a number of cases, but it is not always successful. The vaginal bag, introduced and filled in such a manner as to exert uniform pressure on the cervix, is commended. Polak describes a method of packing the vagina with pads of boiled cotton moistened in sterile boroglyceride. This method in selected cases has given most promising results. Surgical incision of the cervix should be reserved for a

limited number of cases. In the first group of cases, Polak advises expectant treatment until labor has begun. Surgical interference is warranted in exceptional cases only. In the second group, where the cervix is obliterated and thin, morphine after a short delay will usually bring about dilatation. If the cervix is thick and edematous, Polak advises the use of the boroglyceride packs and morphine or scopolamin hypodermically. In the third group of cases, with relative disproportion, careful discrimination is necessary. Long delay or test of labor is to be avoided. Abdominal delivery in such instances imposes an increased maternal risk. There are two clinical dangers which must be counteracted as far as possible, namely infection and post-operative uterine relaxation. For the first he advises cleansing of the vagina with iodine; and for the second intrauterine iodoform gauze pack, which is later expelled or removed through the cervix.

ARCHIBALD L. McDONALD.

MORTALITY IN CÆSAREAN SECTION—J. O. Polak (Surg., Gyn. and Ob., page 115, July, 1923): The incidence of Cæsarean section at Hopkins is 1 in 110 labors (20,000 cases); at Long Island, 1 in 120 labors, 5,000 cases. Potter of Buffalo, 1 in 14, 1921 series; 1 in 11, 1922 series.

Cæsarean section is too freely done.

The indications are:

(1) *Absolute*

- (a) In pelvis below 7 cm. where other means are impractical.
- (b) Cancer of the cervix.

(2) *Relative*

- (a) Misfits after a test of labor. Fault may be in pelvis, child or soft parts.
- (b) Certain cases of central placenta praevia which are clean and without severe blood loss.
- (c) Eclampsia.
- (d) Undilated soft parts after extensive plastic operations.
- (e) Prolapse of cord at term in old primipari with membranes ruptured and cervix unprepared.
- (f) Dystocia from previous retroversion operations.
- (g) Some complicating tumors obstructing the pelvis.
- (h) Accidental separation of placenta with hemorrhage not controlled by conservative measures.
- (i) Ruptured uterus.

Duration of labor and infection influence results. Bacteria are always present after five days.

Operation of choice is transperitoneal coeliohysterectomy. A low incision is used because fundal scars are dangerous. The uterus is not eventrated and the incision is limited by two sutures placed in uterine wall about six inches apart. Hemorrhage is controlled and retraction secured by means of ergot and intrauterine pack. The wound is sutured and peritonealization is done.

Section is more dangerous than other clean, elective abdominal procedures because prenatal work is not routine, interpartum care casual, and there are pathogenic bacteria present in every uterus before the end of the first week.

W. P. HERBST.

A ROUTINE TREATMENT FOR HYPEREMESIS GRAVIDARUM—Edward Speidel (Amer. Jour. of Ob. and Gyn., May, 1923): The author describes the feasibility of adopting a standard treatment for such a condition, the true nature of which is undetermined. He assumes as the most probable cause a carbohydrate deficiency, as explained in the articles of Titus and Givens, which articles have previously been reviewed in this column. He feels that their test (Titus and Givens), based on the blood sugar content as affected by intravenous injection of glucose, may be accepted as of prognostic value. He does not place great practical importance on William's determination of the ammonia coefficient in the urine. He has adopted the following routine in a series of twenty-four cases during the last two years with good results in all but two instances:

First, hospital treatment and isolation from the family must be carried out. There should be plenty of fresh air and sunshine, the eyes being protected with smoked glasses. Food and fluids by mouth are withheld during the first part of the treatment. The daily routine is as follows:

At 7 a.m., colon irrigation with a gallon of warm water containing 2 tablespoonfuls of sodium bicarbonate. One pint of this solution is retained. At 8, 12 a.m., 4 and 8 p.m., a feeding solution is given by rectum to be retained. This solution is made up of 50 gms. of glucose, 100 c.c. of panopepton, 20 gms. of sodium bicarbonate, 60 gr. of sodium bromide, or occasionally 30 gr. of chloral. One or two ampules of corpus luteum are given daily.

This routine is followed for three days, after which 500 c.c. of sterile 10 per cent glucose solution is given intravenously. The intravenous injection is repeated on the sixth day. The general routine is followed for about nine days, when feeding by mouth is begun, first Holland rusk or shredded wheat biscuit, then cereals.

ARCHIBALD L. McDONALD.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

PHYSIOTHERAPY TECHNIC: A MANUAL OF APPLIED PHYSICS. C. M. Sampson, M.D., formerly of the Physiotherapy Service, Walter Reed U. S. Army General Hospital, Washington, D. C., etc. 443 pages, 85 illustrations. St. Louis: C. V. Mosby & Co., 1923. Cloth, \$6.50.

PRACTICAL DIETETICS. Alida Frances Pattee, graduate Department of Household Arts, State Normal School, Framingham, Mass.; former instructor in Dietetics, Bellevue Training School for Nurses, Bellevue Hospital, New York City, etc. 14th edition, completely revised. 687 pages. A. F. Pattee, publisher, 134 South First Avenue, Mount Vernon, N. Y., 1923. Cloth, \$2.60.

THE FORM AND FUNCTIONS OF THE CENTRAL NERVOUS SYSTEM. An introduction to the Study of Nervous Diseases by Frederick Tilney, M.D., Ph.D., and Henry Alsop Riley, A.M., M.D. 1,019 pages. 2nd edition. New York: Paul B. Hoeber, 1923. Cloth, \$12.00.

The second edition of this book differs in only a few

points from its predecessor, which met with such well merited popularity.

The book comprehends even more than its title implies inasmuch as its scope is greater than a stereotyped exposition of the anatomy and physiology of the nervous system.

Many students of anatomical neurology have been impressed with the intimate relationship existing between the nuclei lying in the brain stem and have pondered over their positions and the possible relation of location to function. In considering the anatomy of this portion of the brain it is impossible to escape forming a conception of the important rôle it plays in governing the vital processes of life. No doubt this thought occurred to the authors and influenced them in their decision to combine the subject of anatomy with that of the physiology of the entire nervous system. In attempting this they have followed the principle laid down by Schaxel in his pamphlet entitled "Die Allgemeine und Experimentelle Biologie—Die der Neuordnung des Medizinische Studiums," which states that the only logical method of arriving at a complete understanding of an organ or group of organs is to trace them through their racial as well as embryological development, both physiological and anatomical. In doing this the authors have not only traced the anatomical development but have succeeded in making a logical exposition of the various functions which many of the nervous elements govern in the lower forms before arriving at the maturity displayed in man.

The book is clearly written and is an adornment to American scholarship.

FRANK WHITMORE, M.D.

CEREBROSPINAL FLUID, IN HEALTH AND IN DISEASE. Second Edition, Revised. By Abraham Levinson, B.S., M.D., with a foreword by Ludvig Hektoen, M.D. 267 pages. St. Louis: C. V. Mosby Co., 1923. Cloth, Price \$5.00.

Those familiar with the first edition of this book will welcome the second edition. Latest developments in spinal fluids are incorporated, new instructive illustrations are added and some of the old illustrations discarded, making

the volume thirty-six pages larger than the previous edition. The first chapter, of seventeen pages, is an exceedingly interesting history of cerebrospinal fluid, tracing its development from the time of Hippocrates to its present standard. The second chapter deals with the anatomy and physiology of cerebrospinal fluid. The methods of obtaining cerebrospinal fluid are clearly described and the reasons for failure to obtain the fluid are given in detail. The chapters on the physical and chemical properties and physiochemical properties of the spinal fluid are indeed valuable for those who are interested in more than routine spinal fluid examinations. Pathologic spinal fluids and methods of examination of such fluids for diagnostic purposes are plainly and clearly described, leaving nothing to the imagination; every step in every procedure is precisely set forth. Chapter 8 is devoted to the pathologic findings in the fluids in various diseases affecting the nervous system; while in Chapter 9 the author discusses intraspinal treatment in various types of acute meningitis, syphilis, chorea and tetanus. A bibliography follows each chapter. The author has, with this book, successfully met the long time demand of the clinical pathologist, the pediatricist, neurologist and internist.

G. B. KRAMER, M.D.

GETTING READY TO BE A MOTHER. Carolyn Conant Van Blarcom. New York: The Macmillan Company.

Miss Van Blarcom, the author of this book, is a trained nurse, who has had a wide experience in hospital obstetrical work. It is intended for young expectant mothers as a guide for prenatal hygiene, and to explain the numerous unusual events which occur during this period. The material is well presented. It is systematically and simply stated. The illustrations are well selected and executed. Any intelligent woman can secure accurate and interesting information concerning her condition and care. The book should certainly be in the hands of all nurses who are doing obstetrical work. For private patients some discrimination will be necessary in recommending works of this type, but this book is a distinct and valuable addition to the available material.

ARCHIBALD L. McDONALD, M.D.

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ORIGINAL ARTICLES

SURGERY IN A PAST GENERATION*

A. W. ABBOTT, M.D.
Minneapolis

After holding the horse and prescribing castor oil for the axles of my preceptor's two-wheeled chaise for a year, and then attending lectures and witnessing operations for six months, I regret to say that, as evidenced by my diploma, I was certified by my teachers as qualified to challenge all human diseases and to welcome newborn innocence to this sinful world. I had my own doubts about this and so had many of the good people on whom I tried it. An internship in a hospital eased my conscience somewhat.

At that time the bars were down and all fields wide open. There were no specialists except a few eye doctors; ophthalmologists came later. Every man took what his sign attracted and some signs were very attractive. Some practitioners, it is true, leaned to medicine, some to surgery, but nothing was refused, and then, as now, the rich were welcome and no questions asked. Some pulled on dental, and all on obstetric forceps and bled from a pint to a quart as occasion demanded.

In the early seventies, while my sign still glistened, the credulous keeping me from want, and the wise still passing my door, a change was coming, though we could not see its import or look forward to the wonderful present. A serious study and application of the then new germ theory, activity in experimentation and a new world-wide scientific energy were the early springtime tokens of what we now call modern aseptic surgery.

Sometimes a great mind discovers a great transforming, way-pointing truth—Galileo, Galvani, Newton, Harvey, Jenner, Virchow, McDowell, Sims, Roux, Daguerre, Roentgen. Sometimes these noble branches bear rich fruit but at the wrong season.

The world is not ready: the fruit dies. Fortunately, at the time of which I write, the medical world was blindly but eagerly feeling out a way to go forward and just at this time the magnificent Pasteur turned the key in the lock and showed us how a little microscopic speck of life had held the door against the whole medical world for centuries.

To understand conditions, let us go back 50 or 60 years. To open the skull or even to lift a spicule of bone meant infection if not death. When, having wiped our knives with a perfectly clean cloth, we enucleated cancers of the breast, but, keeping a safe distance from the axilla, one-third of them never passed the fifth day period. Spencer Wells almost got discouraged when 50 per cent of his ovariectomy patients died. In Paris, troughs were most ingeniously applied to carry off the pus from amputations.

You can imagine with what horror I look back at my despair, when the hollow eyes, the sweat, the flickering pulse told me that the poor creatures, with appendicitis, intussusception, intestinal obstruction, cholecystitis, tubal pregnancy, or abdominal abscess (all branded as "inflammation of the bowels") were slipping to the eternal through my helpless fingers; mourned but unwittingly sacrificed. A chalk-white face and a pool of blood under the bed confirmed the diagnosis of myomatous uterus; and we gave ergot. The expected pus seldom failed us, but we thanked God if it was laudable.

It is true that some of us were more cleanly than others. We couldn't help that—our mothers varied. Some washed their patients, their hands and their instruments mainly because of acquired characteristics. Their results to be sure were better than those who were less near godliness, but all fell short of grasping the reason why. Then as now the surgeon lifted up his voice in glorifying the wonders of his art. And yet he had reason. He had done the very best he could without that one single conception that suddenly gave birth to a new surgery, *the reason of infection.*

*Read before the Minneapolis Surgical Society, May 4, 1923.

Before anesthesia, patients only half asleep with opium disliked long operations. Naturally, the older surgeons had cultivated speed. It saved blood and pain. Come back with me before 1870 to the old operating room in Bellevue Hospital in New York. The operation is to be an amputation of the thigh. The students are sitting around the room, leaving a space about ten feet square for the operation and betting on the probable time the operation would take. The patient is brought in, his night shirt is pulled up out of the way, his legs project from the end of the table, an attendant holds up each stockinged foot. The professor, in dress suit and spotless cuffs, breezes in, the watches of the students come out. (Here I want to assure you that the history of the case, the pathology, the anatomy were clearly and concisely stated.) The tourniquet is applied, an assistant grasps the thigh, the surgeon picks up the long catlin, he reaches under and over the limb, the time is taken, there is a convulsive shrinking of the patient as the catlin whirls around the thigh reaching the bone in one sweep, and then, flung to the floor, stands quivering with its point fast in the wood. The retracting bandage is applied, the saw grates through the bone, the attendant drops the leg, the students cheer, the professor bows and the time is in dispute as to twenty-one or twenty-two seconds. And yet after anesthesia was fairly well learned these same men exhibited an anatomical precision and delicacy of dissection that can never be excelled.

The merits of chloroform and ether were discussed for thirty years and after ether gained the lead it took years to reach the simple present-day method of administration. At first the ever-present asphyxia varied from the mild to the profound. While there was no doubt about the deep anesthesia, the color index ran from dark blue to black, and too often the color stayed while the patient departed. As I remember the figures, deaths from chloroform were about one to two thousand, while ether stood at one to thirty-five hundred, to say nothing of the many modestly unreported.

But there were unsatisfied, inquisitive minds in those days. They realized infection enough to know that there was an invisible poisoned arrow ready to bar the path to promising fields and they were wise in waiting while they hoped.

When Pasteur held up the nugget one would imagine there would have been a mad rush for the

gold fields. But, NO! there were standpat won't-believers, unbelievers who prayed God to help their unbelief, and caricaturists who tickled the crowd with amusing microbial pictures, the nonchalant germ, in the meantime, sitting tight and saying nothing. A few good men went to their microscopes and knew the truth.

Gradually the good news spread. Lister, with his phenol barrage, blew the hostile aerial host to destruction while the good Lord did what he could to help the poor patient and doctor. No ridicule can touch his after brilliant achievements. How little must have seemed to him his knighthood compared with the hope he had given to all humanity. Lawson Tait, with his hot water and soap, his courage and dexterity, lifted us another step.

The patient Koch came down from his vigils and read the laws which we can never change.

At this period we must yield the leadership to England, Germany and France. England especially as regarding influence upon American practice. Pages would be needed even to catalogue the names of the great teachers and you are expecting a story of events and times, not individuals.

Antisepsis and asepsis had to fight it out. The stumbling futile theories, the ill considered and never carried out formulæ, the unreasonable excursions in fruitless experimentations were all but a part of development, ludicrous as they now seem. I recall a dear, preprohibition doctor, whom I chanced to detect while I was just ready for an operation, most carefully and gravely scrubbing an ether can, held tight against his unlaundered breast. His explanation was "One cannot be too careful."

During the eighties, it became pretty well proven that we could, with proper care, invade any of the body tissues and cavities without much danger of infection. Then came the great stampede to invade these new territories. A look in at our medical meetings in those days suggested a suspicion that some little operating was being done from a wrong pathological point of view and some perhaps because it could be done and not because it ought to be done. Mounds of gall and kidney stones, breasts unchaperoned by axillary nodes, appendices of all designs and colors artistically arranged on platters, and rows of myomata graded according to size graced our tables, while plates of ovaries needed only the lemon and horseradish to obscure their biologic status. But this is only another example in progression; the useless, the harmful, sink down

by their own gravity and leave the clear supernatant truth.

At any rate, it was a period of great activity. New operations and instruments were being constantly brought forward. The comedy of long articles on some triflingly innocent modification of technique and the tragedy of ill-considered and mischievous suggestions made the picking out of good work arduous, though worth while. We soon learned that a quicker way was to identify the author before reading the title of his paper. The gleam of polished nickel dazzled our minds as well as our eyes. A new form of scissors or drainage tube commanded attention, a new retractor or electrode graded a little higher, while to attain real prominence one must have invented an orificial speculum, vaginal preferred. We soon got the habit of waiting for the invariable assurance of the inventor that the last instrument presented was vastly superior to all its predecessors, and then came the labor and expense of trying them out and discarding the majority.

In this period pathology followed rather than directed a great deal of the surgery. The surgeons saw for the first time, especially in the abdomen, the pathology *in situ* and in the living body.

Virchow had to tease his tissues or cut his sections with the razor. After 1870, the microtome, celloidin and paraffin imbedding and the use of the aniline dyes were worked out. What years of labor and experiment, what successes and failures, what energy and patience! Our laboratories now teach in one year what we plodded through for thirty.

One reason why the work of the surgeon during this period was more difficult than now, was that diseases were more advanced, and, in the breast, bones and abdomen, the growths were larger and complication more frequent, before coming to operation. The public did not know what could be done or when and the doctor was just learning—cancers of the breast firmly attached, immense sarcomata of the bones, myomata 10 to 14 inches in diameter and ovarian cysts holding gallons of fluid were rather common. In the work of others, as well as my own, I have seen a number of ovarian tumors whose weight was more than one-half of the total weight of the woman.

Another hardship was the very excusable prejudice of the public against hospitals. While an inconvenience to the surgeon, this was in some degree a life-saver to the patient. Infection in one

patient was cultured in the next. The surgeon took the fee in one hand, but carried contamination in both. To escape alive was a hope, not an expectation. The hospital to the frightened patient seemed only a painful delay on the way to the morgue, and his judgment was pretty nearly correct. The result was that hospitals were few. In this city, for several years after Father Knickerbocker founded the old Cottage Hospital (now St. Barnabas), there were only six available hospital beds. The only possible place to operate was, of course, where the patient happened to be. The exquisite septic conditions in some of these places may be imagined. The kitchen table, cooking utensils, the linen from the beds all contributed. Dogs and goats and, in one instance, a profane parrot have witnessed my operations, and cats and chickens have stolen my pathological specimens.

There being practically no hospitals, emergency cases must wait for the surgeon. No telephones, poor roads, drifted snow, the slow, tired horse with miles perhaps on foot for the doctor made for fatal delays. The poor doctor may be forgiven if he could not always make the alcoholic stimulant he was carrying to the patient hold out until he arrived at the bedside.

How would the surgeon of today enjoy assuming the care of compound fractures, kidney tuberculosis, appendicitis, brain and abdominal tumors, etc., without sterilizers, without modern artery forceps, with absolutely no electrical apparatus of any kind, without absorbable ligatures, suitable retractors and needle holders and without the diagnostic advantages of the x-ray, the frozen section, blood count, the Wassermann test, the estimation of hemoglobin and kidney function, blood-pressure, basal metabolism and at the same time blot from his intelligence any suspicion of any infective bacterial organism? You see why the ablest of the men before the era of surgical renaissance could not, and dared not, do what now you approach with confidence and an easy conscience. This is not an overpainted picture of the field where these old strong heads and courageous hearts labored. You may thank the God of healing that "time and manners" have changed.

While congratulating ourselves upon our present happy state, are we on much firmer ground than our forbears? Is it beyond reason that there are still undiscovered forces in nature which are to be sought out and made to help the healing art? Upon what procedures are we entirely agreed? For what have

we a definite standard? What is the meaning of all the discussion about gastric and duodenal ulcer, drainage of the gall-bladder or excision, abdominal drainage, splenectomy, cancer and radium, open treatment of fractures, anesthesia and the hundred and one other questions that fill our journals and enliven our societies, unless it is that we are only in the foothills and a long, long way from the summit. To learn is man's perpetual franchise. The forgotten things of the past are useless, its only value is in its few unforgotten treasures, and one generation can transmit only a minimum of its experience to the next. The upgrade is heavy and tiresome and this brings me to the real intention of this paper, which is to present the devotion, strength, courage, and persistence of the fathers in the past generation, in such a way that you will respect their labors, take heart, keep the faith and make the grade.

TUBERCULOUS ENTEROCOLITIS

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In a recent paper I discussed the diagnosis of tuberculous enterocolitis, and came to the conclusion that the fundamental principle in diagnosis depended on interpretation of symptoms, signs and laboratory findings, and the general consideration of probability as applied to the tuberculous individual. The diagnosis of tuberculosis is made largely on circumstantial evidence which has been collected from the history of the ailment itself, the examination of the patient, and the laboratory data afforded. The special methods at our disposal are: (1) direct examination through the proctoscope; (2) the study of material collected at the proctoscopic examination; (3) the examination of the stools, which is especially valuable in cases of healed or latent pulmonary disease in which the sputum is negative, or in which there is no demonstrable pulmonary disease; (4) the examination of the stools for evidence of ulceration, as in other ulcerative conditions; (5) the very definite and accurate observations of the roentgenologists; in view of the frequency with which the intestine is affected, and the absence of symptoms, or their confusing character, such an examination assumes proportions of greatest worth, and is desirable in all

cases of pulmonary tuberculosis; and (6) microscopic examination of tissue removed by the surgeon in operations performed from choice when the diagnosis is certain, or when advisable because of severity of symptoms, or when an opinion can not be given with certainty.

Following these methods of examination, fifty cases have recently been studied in the Mayo Clinic. Seventeen were studied at necropsy, and thirty-three were treated surgically. Not only signs and symptoms dealing with the bowel alone were taken into consideration, but also those affecting the fundamental functions of the body. In this way, the effect of the tuberculous infection itself was evidenced, and the alterations from normal of fundamental functions, such as heart beat and blood pressure, were considered.

The whole series was divisible into sub-groups, comprising (1) cases in which clinical and laboratory findings were positive for pulmonary involvement, or suspect cases in which roentgen-ray findings were positive, or cases which were negative clinically, and yet had positive roentgen-ray findings (these were considered together because there were demonstrable pulmonary lesions in all), and (2) cases in which there was neither clinical nor laboratory evidence of pulmonary tuberculosis. Group 1 will be designated here as "positive," and Group 2 as "negative."

CONSTITUTIONAL SYMPTOMS

The constitutional symptoms of tuberculosis, depending, as they do, on the interchange of tissue fluids from the diseased area to the blood and lymph streams, should not be materially changed, regardless of the area that is affected by the morbid process. Krause, in writing on this subject, recounts some interesting observations made eleven years before, showing that the intoxication depends on tissue fluid interchange, and also that the absorption of normal tissue juices from other animals is extremely toxic. He believes that his experimental work proves "that any tissue material, if in proper physical condition, and if put into the circulation in large enough amount, in a given time, will poison an animal," and, "that the intoxication of tuberculosis, in the natural etiology of the infection, is in large measure a non-specific process both by the absorption of material found in amounts large enough to produce symptoms and that in by far the greatest number of infections physiological communication between the foci and the enveloping

structure is through the medium of tissue lymph." Such a conception necessitates the supposition that there is not only physiologic activity in the tissue surrounding the foci, but that the foci themselves are pathologically active. Many of the patients in the group reported here had been in apparent good health until within a few months of the illness which brought them to our notice, and one can not help but believe that the acuteness of their constitutional symptoms meant either reinfection from an old focus, or an infection acutely active, or rapidly passing beyond its original barriers.

INCIDENCE

The males outnumbered the females more than two to one, and the largest number of patients in any one decade were between thirty and forty years (Table 1). This is in keeping with the view of pathologists who believe that intestinal involvement is a late manifestation of the infection.

TABLE 1

DISTRIBUTION OF CASES BY AGE AND SEX

Years	Cases	Males	Females
10 to 20	4	3	1
21 to 30	11	8	3
31 to 40	20	13	7
41 to 50	7	6	1
51 to 60	7	4	3
61 to 70	1	1	—
Total	50	35	15

FINDINGS AT EXAMINATION

Pulse rate.—There was not sufficient alteration in the pulse rates to warrant the belief that the disease in the lung has any greater influence on the heart beat than in cases in which there is intestinal infection alone. From the pulse record, we were able to observe that in twenty-seven cases it was above the normal for temperature, if one considers that the pulse rate is increased ten beats for each degree of rise in temperature. In only three was it below normal; in twelve it was normal, and in eight it varied from time to time. The pulse rate was similar to that in cases of tuberculosis elsewhere in the body, and subject to the well recognized influence of the disease itself (Table 2).

Physical and roentgenologic findings.—The accuracy of the physical examination was checked, to be sure that the observations on fundamental functions could be depended on. The physical examination of the lungs gave positive evidence of pulmonary disease in eighteen cases; the roentgeno-

TABLE 2

PULSE RECORD, BY AGE

Age years	Average pulse, all cases	Positive group, average pulse	Negative group, average pulse
10 to 20	91	93	99
21 to 30	101	104	100
31 to 40	87	85	92
41 to 50	86	89	90
51 to 60	92	89	90
61 to 70	108	108	

grams were positive in seventeen, and suggestive in one. The physical examination was negative in seventeen cases; the roentgenograms were negative in thirteen, and positive in three; it was not made in one. The physical examination aroused suspicion in eleven cases; the roentgenograms were positive in two of these, negative in two cases, and suspicious in four; in three cases they were not made. Because of the conditions under which the patient entered the Clinic, and the severity of the illness, there was no record of the physical examination, or of roentgenograms, in five cases. This total gives a record of fifty-one cases, but one is listed twice because the physical examination changed from negative to positive, while the patient was under observation.

Blood counts.—The condition of the blood is shown in Table 3. The average hemoglobin in the "positive" group was 66 per cent, the average erythrocytes 4,150,000, and the average leukocytes 8,797. The average hemoglobin in the "negative"

TABLE 3

BLOOD COUNTS

Hemoglobin (Dare)		Erythrocytes		Leukocytes	
Per cent	Cases		Cases		Cases
30	1	2,000,000	1	3,000	1
40	3	3,000,000	12	4,000	3
50	8	4,000,000	25	5,000	3
60	18	5,000,000	3	6,000	6
70	14			7,000	5
80	5			8,000	4
Per cent				9,000	6
Lowest	30	Lowest	2,700,000	10,000	8
Highest	85	Highest	5,400,000	11,000	3
Average	65	Average	4,460,000	12,000	4
				13,000	1
				14,000	2
				17,000	1
				19,000	1
				Highest	19,400
				Lowest	3,600
				Average	8,975

group was 65 per cent, the average erythrocytes 4,190,000, and the average leukocytes 9,500. It will be seen that the average blood count varies but little, whether it is computed separately for the positive and the negative groups, or for the two groups together. Brown, in his study, found 9,950 leukocytes in incipient cases in males, 9,637 in the advanced cases in males, 8,485 in the incipient cases in females, and 9,744 in the advanced cases in females. The Mayo Clinic records agree almost exactly with Brown's. The figures for hemoglobin, however, are essentially different, probably due to the fact that the Dare hemoglobinometer was used in the Clinic, while Brown used the Tallquist scale, as a rule, and the von Fleischl apparatus in a few cases. Accordingly, Brown's readings are much higher, averaging from 88.2 to 91 per cent. The erythrocytes numbered more than 5,000,000 in his cases. The fact that his patients all had pulmonary trouble, while in my series more than one organ was involved, should not make any difference. The probable cause of the difference is that Brown's patients were in sanitariums under rest, discipline and dietetic care, while in my series the patients were such as the general practitioner meets; they had not been hospitalized previous to their examination at the Clinic.

Blood pressure.—It is well known that the blood pressure of tuberculous patients is lower than normal. This has been brought out in several papers by Sewall, who has called attention also to a variation in the blood pressure when the position of the patient is changed from the recumbent to the erect posture. Such blood pressure variations have appealed to Sewall as a reliable method of determining the vitality of the patient, and he feels sure that this variation occurs in asthenia, in occult tuberculosis, and may be the result of focal infection which, symptomatically, may closely resemble active tuberculous infection. In the series studied, we do not have records of the readings taken in various postures, but the blood pressure was uniformly low, regardless of whether the patient had pulmonary tuberculosis or intestinal tuberculosis alone, or both. The blood pressure according to the age of patients in both the positive and the negative group is shown in Table 4. Comparing the averages, and omitting the erroneous reading and that of the case of Addison's disease, a uniformity is again demonstrated, which would tend to show that the effect on blood pressure is the effect of

TABLE 4

BLOOD PRESSURE*

Cases with positive findings of pulmonary infection				
		Highest	Lowest	Average
		125/90	92/52	109/72
Cases with no evidence of pulmonary infection				
		Highest	Lowest	Average
		160/90	86/58	114/76
According to age of patients				
Cases	Age, years	Highest	Lowest	Average
4	10 to 20	120/90	110/64	115/74
11	21 to 30	120/70	86/58	105/62
20	31 to 40	139/90	96/50	114/76
7	41 to 50	120/80	88/66	105/73
7	51 to 60	160/90	90/65	119/74
1	61 to 70	100/60		100/60

tuberculosis on the organism as a whole, rather than on the particular organ diseased.

Weight.—In considering the effect of tuberculosis on the weight of patients, it was found that four had normal weight, one had gained weight, thirty-five had lost weight, two were emaciated, and eight did not know their previous weight, so that no percentage of loss or gain could be estimated. Of the eight patients whose loss or gain was not known, two could not have been materially reduced, since one weighed 225 pounds, and the other 180 pounds. It was found, as might have been expected, that the percentage of weight loss varied with the temperature of the patient, but did not seem to vary to such a marked extent with the length of time from which the patient dated his illness. As a rule, fever and weight give much information concerning the progress and also the prognosis of the disease; they represent the progressive pathologic change from its beginning to its end. The percentage of loss of weight, the interval elapsing between the weights compared, and the temperature are shown in Table 5. In this group, the lowest percentage of loss was 3, and the highest 33, per cent of the body weight, with an average loss of 16 per cent; the interval varied from three months to four years. Norris says: "The amount of weight loss in pulmonary disease varies with the severity of the infection; in acute types of disease, the loss may amount to one-third of the patient's weight." This corresponds almost exactly to my observations, which apply to pulmonary and intestinal disease, and to intestinal disease alone.

*There is one case of evident error with a reading of 150 systolic and 124 diastolic, and one patient was in shock, having Addison's disease, and a blood pressure of 60 systolic and 40 diastolic.

In cases in which it was possible to compare the relation of the loss of weight to the condition of the bowels, it was found that the eleven patients with constipation had lost on an average 15 per cent; nine patients with diarrhea, one of whom was emaciated, had lost on an average 18 per cent; three patients with alternating diarrhea and constipation had lost on an average 17 per cent, twelve patients whose bowels were either normal, or who had no complaint, had lost on an average 15 per cent, and two patients who had a history of having passed tarry stools had lost on an average 30 per cent. It will be observed that no great variation in loss of weight could be demonstrated, regardless of the condition of the bowel.

Primary intestinal tuberculosis.—Primary disease of the bowel in adults is rare. Intestinal tuber-

culosis usually follows primary involvement of the lung, but in this group there were twelve cases in which the physical examination and the roentgenograms of the chest were negative. Further examination failed to reveal a primary location in seven (14 per cent), although abdominal operations were performed in eleven cases, and necropsy in four. No sufficient explanation has been found to cover this high percentage of primary intestinal disease. The suggestion that these patients come from a country in which only in recent years animals have been examined for tuberculosis, might have a bearing on these data. This recalls the theory of von Behring, that tuberculosis may primarily be due to ingestion, rather than to respiration of the infection, and it is possible that many of these patients may have been primarily infected through the intestinal tract, and that the disease had remained dormant over a varying number of years. Holt, in speaking of such a premise, believes that although it has been asserted that the germ may pass the mucous membrane without damage, evidence of disease will remain, if the glands have been secondarily affected. "Tubercle bacilli entering the alimentary tract rarely cause lesions of the gastric mucous membrane, or through it reach the lymphatic circulation. In the intestines, however, more favorable conditions exist. It is possible for the bacilli to reach the mesenteric lymph nodes without causing disease of the intestinal mucous membrane, but I believe it to be exceedingly rare; for by careful search I have seldom failed to find intestinal ulceration where the lymph nodes were manifestly tuberculous." Since it has become the practice to test cattle, doubtless in the future the number of persons with tuberculosis will be reduced, and further study will fail to reveal so large a percentage of cases of tuberculosis primary in the intestine.

Intestinal complications; perforation.—Stengel divides tuberculosis of the intestines into three groups: ulcerative, stenotic, and chronic hyperplastic. The large percentage of cases in my series were ulcerative in type, but in five cases, strictures were discovered, in five evidence of obstruction was found, and in three perforation. Fenwick and Dodwell believe that perforation is rather common, quite as common as it is in cases of typhoid fever. They quote Orth as authority for the statement that the appendix is a favored spot for tuberculous disease and for perforation, and that such a perforation is very apt to be followed by the formation of

TABLE 5
VARIATION OF WEIGHT WITH TEMPERATURE

Percentage	Interval between weights compared, months	Temperature
10	1	99
7	1	99
3	Unknown	97.6
7	Unknown	99
27	Unknown	93.4
14	43	99
11	12	99
20	3	100.8
11	10	93.4
14	Unknown	93.2
28	43	99.4
16	3	101
25	12	Not stated
22	12	96.6
14	12	98
9	2	98
14	6	99.3
25	3	101
5	Unknown	Not stated
21	5	101.3
14	9	99 to 101.5
33	18	100
14	4	93
20	8	93
27	2	98.6
8	1	100
8	9	93
20	43	99
11	8	93
7	Unknown	99.4
19	3	Not stated
12	8	Not stated
20	Unknown	99.6

a local abscess and subsequent fistula. Observation has shown that a fistula following operation for appendicitis should always be investigated bacteriologically, particularly for tuberculosis bacilli and for actinomycosis. Sulphur bodies were demonstrated in six cases of abdominal fistulas in our service in the Clinic within the past year, and the tuberculosis bacillus has been found in a few instances. The examination of such fistulas should not be neglected because of the very great bearing on the prognosis to the patient, and the advisability of further operative procedure.

The diagnosis of a fecal abscess according to Fenwick and Dodwell “depends on the observation that, whenever an abdominal swelling, unattended by special symptoms, presents itself during the later stages of chronic phthisis, irregular and ill-defined in outline, immovable on deep inspiration or by pressure with the fingers, tympanitic on light percussion, and dull on deep percussion, with gurgling

and pain on pressure, it will almost certainly prove to be a fecal abscess.” The distinction between abscess and the thickening of the cecum that is so common in this type of disease, depends on the fact that in the latter there usually is a tumor which is less distinct in outline, is less painful on pressure, and exhibits little tendency to increase in size. One unusual perforation occurred in a case in which loops of intestines had become approximated by adhesions with a resulting perforation and fistula, and finally perforation of the bladder, so that intestinal gas passed, following micturition. In another instance, not mentioned in the present series, a boy developed glands in the rectum which became so enlarged that they formed a tumor fully 10 cm. in length, finally ruptured through the rectal wall, and the caseous material was passed at stool.

Strictures.—Strictures were found in the rectum, at the base of the appendix, in many locations in the ileum, in the ascending colon and in the ceco-

TABLE 6
CONDITION OF THE INTESTINES

	Alternating constipation and diarrhea		Normal or Constipation stated percentage				Alternating constipation and diarrhea		Normal or Constipation stated percentage		
	Diarrhea	Constipation	Diarrhea	Constipation	Percentage		Diarrhea	Constipation	Diarrhea	Constipation	Percentage
Pain in the abdomen..	4	13	14	14	90	Loss of appetite....	10	1			
Described as cramping or as colic...	1					Sour stomach	10	3			
Cramping		4	5	2		Ascites	1				2
Burning		1	1			Night sweats	1				2
Epigastric		4	1	5		Weakness	2	4	1	14	
Food distress			2			Hemorrhage	2				4
Located in epigastrium			1			Nervousness		2			4
Mid-abdomen			1			Stools, mucus		5	2	14	
Typical appendicitis				1		Blood			1		
Right lower quadrant				5		Melena			1		
Tender abdomen, soreness	3	5	5	1	28	Lesion					
Upper			2			Jejunum			1	1	4
Lower			3			Ileum	3	6	7	11	54
Tumor palpable	1	3	5	5	28	Ileocecal valve			3		6
Right lower quadrant			4			Appendix	2	4	2	2	20
Palpable stricture...			1			Cecum	3	8	12	9	64
Nausea	2		3	3	16	Colon	1	5	3	5	28
Vomiting	3	2	7	4	32	Transverse colon...		2		4	12
With relief			1			Ascending colon...		6			12
Digestive disturbances	4	10	14	3	62	Descending colon...				1	2
Flatulence		10				Rectum			1	1	4
Gas	4	10	7	1		Glands	1	4	5	3	26
Distention	4	10	2			Fistula		1	1	2	8
Belching	4	10	1			Peritoneum	2	7	1	2	24
Water-brash	4	10		3		Miliary	2	1	1	1	10
Food distress	4	10				Mesentery				1	2
						Fissure in ano.....		1			2
						Tubes		1			2
						Omentum	1				2

colon. In the first instance, the stricture was palpable and blood and mucus were present in the stool. In the second, a mass was palpable in the ileocecal area, and pain was present during attacks confined to the right lower quadrant, and increased in severity by movement. The strictures in the ileum gave symptoms that were characteristic of appendicitis, although in four instances the appendix had been removed elsewhere. In one case blood and mucus appeared in the stools, and melena and constipation were complained of; in this case an operation had been performed elsewhere, and the tumor found was thought to be carcinoma of the pelvis.

Obstruction.—Obstructions were found in the ileocecal valve in one case, and in the small intestine in four. The symptoms complained of in the first case were typical of appendicitis, but with persistent tenderness and the presence of a small tumor. In the other cases, tender masses were discovered on examination; there were severe cramps in one instance, simulating gall-bladder disease, and distention, vomiting and constipation were complained of. In one characteristic case there was evidence of gurgling sounds with relief on the passage of gas, fecal vomiting and visible peristalsis.

SYMPTOMS

Archibald believes that certain symptoms are significant of the location of the disease in the bowel. In general, it may be said that if the large bowel is markedly involved and ulcerated, blood in the stool and diarrhea may be expected to occur. In cases affecting the small bowel, but without much involvement of the colon, constipation would naturally be expected, while if both the small and the large bowel are involved, there should be alternating diarrhea and constipation. I was interested to know whether or not a fixed syndrome could be obtained which would direct attention to the location of the disease, particularly because when the clinician believed that only a small area was involved, and a lesion was confirmed by roentgen ray, the surgeon almost invariably found a much wider distribution. Moreover, it is known that in the downward course from the stomach to the ileocecal coil, the number of ulcerations increases, while from this point to the termination of the rectum, it decreases. In most instances, however, both the small and the large bowel are involved (Table 6).

The findings tabulated in Table 6 are not characteristic; the symptoms of bowel trouble do not indicate the location or extent of the lesions. Pain was present in each of the four cases in which alternating constipation and diarrhea appeared. It was described as cramping or as colicky in one instance. Digestive disturbances, consisting of distention, belching, water-brash and food distress, were uniformly complained of, nausea and vomiting were often present. Pain was a symptom in the thirteen cases in which there was diarrhea, and was described as griping, or burning in character; in four of the thirteen, it was located in the epigastrium. Digestive disturbances such as gas distention, belching, food distress and loss of appetite were present in ten of the thirteen. In each of the fourteen cases in which there was constipation, pain was present; it was described as cramping, or burning, or colicky in character, and was located in the epigastrium or mid-abdomen in two cases, and in the rectum in one. Nausea and vomiting appeared in ten of the fourteen cases, and flatulence, gas, distention, belching, loss of appetite and sour stomach were complained of in nearly all. In nineteen cases there was no bowel complaint, and this is the only group in which pain was not present in every case. However, it was present fourteen times, and one patient had had a typical attack of appendicitis; in five cases the pain was in the right lower quadrant, and in five, in the epigastrium. According to Stockton, 1 per cent of all cases of appendicitis are tuberculous in origin. Gas and water-brash were complained of less often in this group than in the others, and nausea and vomiting were complained of in only seven of the nineteen cases. In the cases of alternating diarrhea and constipation, the ileum was involved as often as the cecum. In the cases of diarrhea alone, the ileum and cecum were again affected, and this was true in those cases in which there was constipation, and also in those in which there was no bowel complaint.

It is generally believed that tuberculous enterocolitis is not often associated with tuberculous peritonitis, but in this series there was definite peritonitis in ten cases.

The findings in Table 7 are taken from Logan's series of thirty-six cases of tuberculosis enterocolitis, and are of interest in comparison with the series reported here.

In my series, appendicitis, gall-bladder disease, gastric ulcer, meningitis, pericarditis, peritonitis,

Addison's disease, lupus, bronchopneumonia, obstruction, multiple fistula, and genito-urinary tuberculosis were all observed as complications. In one instance pericarditis, definitely tuberculous, was the cause of the patient's illness, and at necropsy, ulceration of the ileum and cecum was present. Since the clinical examination did not show evidence in sixteen cases of the severe condition, roentgenograms of the bowel were not taken. This illustrates how often serious pathologic change may be progressing in the intestine without producing symptoms which would direct attention to the abdomen. However, a lesion was found in twenty-eight of the thirty-four cases in which roentgenograms were taken. In the roentgen-ray examination of the colon, as Carman has pointed out, the roentgenologist, not knowing the clinical history or findings at clinical examination, should be contented in most instances to make a diagnosis of a lesion in the bowel, rather than to specify its nature.

TABLE 7

FINDINGS IN THIRTY-SIX CASES OF TUBERCULOUS ENTEROCOLITIS REPORTED BY LOGAN

Age, years	Per cent	Sex	Cases
20 to 30	30.5	Males	17
30 to 40	33.3	Females	19
40 to 60	30.5		
Duration of symptoms, years	Per cent		
Less than 1	52		
1 to 3	28.9		
4 to 6	11.1		
10	1		
12	1		
20	1		
Symptoms	Per cent		
Alternating constipation and diarrhea.....	11.1		
Diarrhea	16.6		
Nausea	72.2		
Constipation	50		
Vomiting	64		
Onset with acute attack of abdominal pain	50		
Onset with a history resembling appendicitis	50		
Pain			
Present	89		
Absent, 1 case; not noted, 3 cases.			
Character of pain			
Soreness and tenderness.....	18		
Crampy	64		
Not noted in 8 cases.			
Discomfort and symptoms after meals....	49		
Nervousness in 5 cases			
Gas	58		
Anorexia	58		
Previously operated on elsewhere, 21 cases; no improvement in 20			

CONCLUSIONS

1. The fundamental functions of the body in tuberculosis are apparently affected by the disease itself, and not influenced particularly by the site or area involved.
2. Obstruction or stenosis and perforation are more common in tuberculosis enterocolitis than has been believed.
3. There are no characteristic symptoms which will definitely locate in any special area of the bowel.
4. The surgical and necropsy evidence of tuberculous enterocolitis is almost invariably more widespread than the clinician could anticipate.

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THE NEM SYSTEM OF FEEDING

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The most beneficial result of the war in the field of pediatrics was the new feeding system of Professor Pirquet, or the so-called "Nem System." Before the war little attention was given to the nourishment of the healthy adult. This was left for the patient himself to decide. The physicians interested themselves largely in nutritional problems, in kidney, stomach and metabolic diseases, and these more from a qualitative than a quantitative standpoint; they considered only roughly the quantitative side of feeding in fattening and reducing cures. This carelessness was due to the comparative cheapness of food.

The war with its attendant high prices of food in Europe brought an interesting study of the nutritive value of every food and resulted in an attempt at making a method of listing food values which would be so simple as to be appreciated by the general public, and the average practitioner. We must thank the members of the Pirquet School for their system, which will probably revolutionize the system of infant feeding, and make scientific feeding as simple as unscientific feeding.

The two main divisions of the Pirquet system are:

1. The substitution for the calorie of a more comprehensible physiologic unit—the milk unit.
2. The measuring of the daily food need, with the sitting height as an index.

The Nutritive Value of Foodstuffs.—Experience has shown that the caloric system—hitherto employed in the calculating of nutritive value of foodstuffs—is, despite its being of highest scientific value, too complicated and too apt to be purely theoretical to be readily applicable in every-day use. To overcome this difficulty, Professor Pirquet has worked out a system which is based on a comparison of the nutritive value of a certain quantity of any foodstuff with a quantity of milk. Instead of using the calorie, which is the amount of food necessary to raise one gram of water one degree C., Professor Pirquet uses milk containing 667 calories to the quart as a standard, and calls one gram of this milk *the unit of nutrition*, and terms it "nem,"

this being the abbreviation of Nutrient-Element-Milk. By this simple unit he makes the measurement of food a living problem. No longer need one think of food as a physiological chemical problem, or of producing the amount of heat that will raise a specific amount of water a definite number of degrees. Instead of this, from now on we need only think of food in a definite, visible, tangible, serviceable unit. From now on, if we tell a mother a child needs 500 nems of food, she no longer needs to be a physiological chemist. All she needs to do is to picture before her mind's eye 500 c.c. of milk or its equivalent.

Corresponding to the metric system of weights to which:

10 grams equal.....	1 dekagram
100 grams equal.....	1 hectogram
1000 grams equal.....	1 kilogram

Professor Pirquet calls

10 nems.....	1 dn (dekanem)
100 nems.....	1 hn (hectonem)
1000 nems.....	1 kn (kilonem)

Therefore, as one liter or quart of milk weighs about 1000 gms., it has the nutritive value of 1000 nems, of 100 dekanem or 10 hectonem, or 1 kilonem. In comparing the nutritive value of 1 gm. of any foodstuff with that quantity of milk which corresponds to it in nutritive value, and expressing the results in the new nem terminology, we derive the following table:

For example, the nutritive value of:

1 gm. of sugar	6 nems
1 gm. of flour	5 nems
1 gm. of potato	1.25 nems
1 gm. of butter	12 nems
1 gm. of lard	13 nems
1 gm. of sauerkraut	0.30 nem
1 gm. of fresh fruit	0.67 nem, etc.

If we wish to compare the nem with the caloric system, we must remember that 1 nem equals two-thirds of a calorie or 1.5 nem equals 1 calorie, and therefore we can rapidly transpose the caloric value of food to the nem value, if perchance we do not recall its nem value.

The milk is, according to the nem system, also used as a *unit of concentration*. Foods having equal nem value for the same quantity are called equal nourishment or Co₁. Foods having twice the nem value in comparison to the same quantity of milk

are called double nourishment or Co_2 . Foods which have one-half as many nems in the same quantity of milk are called one-half nourishment or $\text{Co}_{.5}$. As an example, milk, with 17 per cent sugar, having 2 nems per c.c. would be double nourishment:

100 c.c. milk equals 100 nems
17 gms. sugar equals 100 nems

100 gms. mixture equals 200 nems (double nourishment)

Also a cereal composed of 130 gms. milk, 8 gms. Farina, and 5 gms. sugar would also be double nourishment, if boiled down to 100 c.c.:

130 gms. milk—equals 130 nems
8 gms. Farina—equals 40 nems
5 gms. sugar—equals 30 nems

Boiled down to 100 c.c. equals 200 nems (double nourishment)

As an example of equal nourishment I would give undiluted milk, or one-half milk plus eight per cent sugar:

100 c.c. milk equals 100 nems
100 c.c. water equals 000 nems
17 gms. sugar equals 100 nems

200 c.c. mixture equals 200 nems (equal nourishment)

Or, a dish prepared from spinach consisting of
70 gms. spinach equals 28 nems
3 gms. butter equals 36 nems
34 gms. of milk equals 34 nems

100 gms. equals 100 nems (equal nourishment)

Therefore, by making all of our mixtures and food preparations in multiples, or fractions of milk value, the amount of such foods needed in a dietary can be rapidly determined.

Milk is a good example of the unit of concentration required for the human infant. Experience has shown us that the water contents of milk, or the concentration of milk is the proper composition to sustain life and cause infant growth.

The Pirquet Clinic has demonstrated that infants in the first half year, although doing best on Concentration 1 (the normal concentration of milk), and sometimes on Concentration 1.5 to 2, will suffer seriously on Concentration 3 or 4.

After the first year, Concentration 3 can be used for a month or two, but Concentration 4 will be

fatal. Low concentrations as the old-fashioned one-third and one-fourth milk mixtures are unnecessary and unphysiologic and cause excessive activity in the infant urinary apparatus.

All food is divided into two main divisions—"structural units" and "fuel units."

As pure "fuel units," fats and carbohydrates are the main source of supply. They are consumed in the cells and make power and heat. By this process power and energy, which are necessary to the maintenance of the daily body functions, are supplied. The work of the muscles, the breathing, maintaining of the circulation and the production of normal temperature are only possible by the addition of such food substances.

The proteids are our main "structural units." They can to some extent replace the fuel units, but the fuel units can never replace the structural units. The functions of structural units or proteids are the building of body cells, the replacement of destroyed cells, the formation of digestive juices, and so forth. The question of how large the daily need of proteids (the albumin minimum) is has caused considerable discussion. If we go below a certain limit we get severe disturbances which in the young child manifest themselves by considerable diminution in growth. Experiments done on animals show that if the proteid minimum is passed we get disturbances in the carbohydrate metabolism, only a part of the carbohydrates being then utilized, the remainder being eliminated.

In this question of "albumin minimum," mother's milk again stands as a unit. According to the Pirquet school the amount of albumin present in breast milk (10 per cent of nem value) represents the optimum, as evidenced by the fact that on this food (breast milk) the child doubles its weight in six months and trebles it in a year, showing that breast milk contains the proper amount of the so-called building units. We must presume that the quantity of albumin in mother's milk is the most desirable, as experience has shown us that mother's milk is the ideal nourishment for a growing child. Similarly, in older children and adults, the same proportion of albumin is satisfactory, as shown by the experiments of Chittenden and Hindbede.

Having established that 10 per cent of the nem value of a food in albumin is the optimum, and that just below this is the minimum, Pirquet has determined that the maximum requirement of albumin is about 20 per cent of a nem value of a diet. If

too much albumin is given it must be eliminated through the kidneys as unused urea, and so becomes a burden to the kidneys.

The Measuring of the Daily Food Need with the Sitting Height as an Index.—Within the last years, determinations as to the food requirement have had either the surface or the weight as an index. The surface of the body as an index is probably the more accurate, but is extremely complicated for practical use. Consequently, most authorities at present use the weight as an index to the food requirements. This also has many errors. It is at once evident how indefinite this is when we consider that an infant at birth should get about 100 to 120 calories per kilo of body weight, while an adult receives only 30, showing that weight is far from an index unless also controlled by surface and age and state of nutrition. The error of using weight for an index is also shown by the different caloric requirements of different animals, some requiring 100 calories per kilo, and some 50 calories, or less.

It is assumed that the food requirements of children or adults depend more upon the absorption surface of the intestine, which may be called the "nutritive surface." While neither age nor the height of the body are decisive features, since their relation to the nutritive surface is not a constant one, Professor Pirquet has determined that a constant relation does exist between a sitting height, which is always easily measurable, and the nutritive surface of the intestinal tract.

Professor Pirquet has proven that, given the sitting height, the nutritive surface of the intestinal tract can readily be calculated, since the square of the sitting height corresponds to the latter. Researches have shown that the average length of the intestinal tract is ten times the sitting height, also the average breadth of the intestinal tract is $\frac{1}{10}$ of the sitting height; consequently, the nutritive surface of the intestinal tract is the sitting height times 10, multiplied by the sitting height divided by 10, which amounts to the square of the sitting height.

The quantity of food which a normal human being can consume in twenty-four hours, without impairing health, is called *maximum*, or limit of tolerance. The *minimum* is the quantity of food necessary to sustain life while at perfect rest, and the *optimum* would be the ideal twenty-four-hour consumption, taking into consideration age, mode of life and so forth. The *optimum*, of course, varies

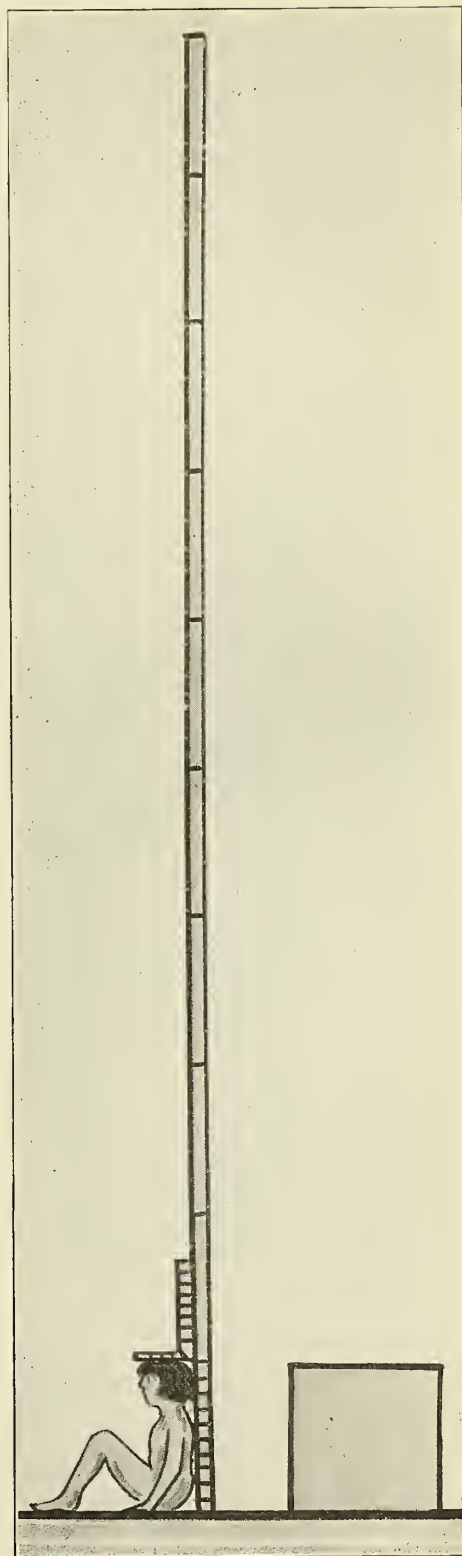


Chart I. Nutritive surface of intestine equals—length, 10 times the sitting height; in breadth, $\frac{1}{10}$ the sitting height—or sitting height squared.

widely, whereas the *maximum* and *minimum* are more or less constant. A laborer will have naturally different requirements from a seamstress, and a growing child will want more food than an aged person.

Professor Pirquet has determined that the *maximum* may be defined as that quantity of milk (measured in grams or a quantity of any foodstuff of the same nutritive or nem value) which corresponds to the number of square centimeters of the nutritive

limit of tolerance can vary considerably. It may sink down to nearly the *minimum*, and in extraordinary circumstances even sink below the *minimum*. Between the *maximum* and *minimum* lies the breadth of tolerance. In this space lies the *optimum*, which, as mentioned before, varies, depending upon two factors: (1) the physical condition of the patient; (2) the amount of work the patient has to do.

In feeding a new-born, we can, according to

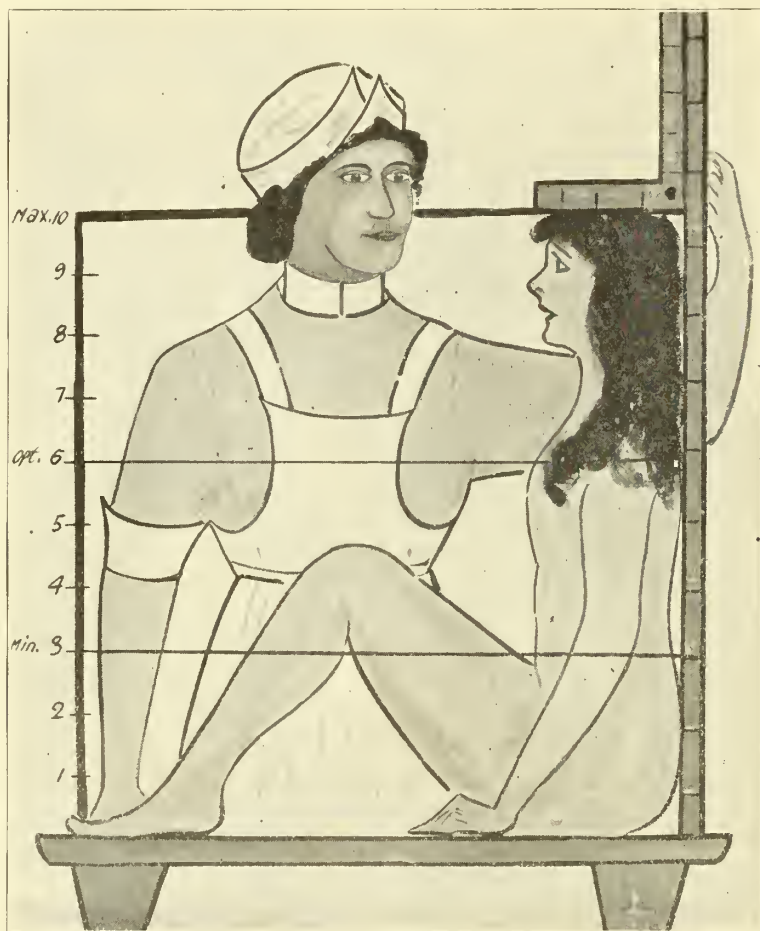


Chart II

surface. In other words, the square of the sitting height equals the *maximum*. As an example, a child who has a sitting height of 30 cm. would have a nutritional surface of 900 sq. cm. and might therefore take 900 nem or 900 gm. of milk in 24 hours, or a quantity of any foodstuff of the same nutritive value.

The *maximum* and *minimum* for each individual, even if not definitely fixed, still have quite definite borders. In diseased conditions the *maximum* or

Professor Schick, proceed as follows: On the first day, after six hours sleep and rest, give one-tenth sitting height squared ("SH²") : second day two-tenths, third day three-tenths, fourth day four-tenths SH², and from the fifth day on remain at five-tenths. If insufficient breast milk is present, a part of the breast milk can be replaced by breast milk plus 17 per cent sugar or cow's milk plus 17 per cent sugar, as double nourishment. If no breast milk is present we can use equal nourishment of

cians and public in the accurate feeding of the healthy as well as the sick child.

2. The replacement of the calorie by a simpler unit, the nem, making it possible for the mother, even though lacking in scientific knowledge, to accurately follow out the doctor's orders.

3. The replacement of the other methods of determination of food requirement by the use of the sitting height as an index.

4. A rapid means of determining the proteid content of a diet, using the mother's milk as a unit.

5. Systematic attention to the concentration of the food so that the physician can rapidly prescribe foods of various concentrations as may be indicated in conditions like vomiting, anorexia, bed-wetting, effusions and cardio-renal conditions.

EXAMPLES

Child A. Two months old. Sitting height, 38 cm.

If the child needs the square of the sitting height (s. h.)², his

Maximum—

38 squared or 1,444 nems.

Minimum—

3/10 (s. h.)² or 433 nems.

Optimum—

3/10 (s. h.)² plus

1/10 (s. h.)² for growth plus

1/10 (s. h.)² for fat

5/10 (s. h.)² or 720 nems.

This would be divided proportionately among his number of meals; if he received 5 meals, he would get one-fifth of this quantity at each meal, or 144 nems. This can be given either as 144 c.c. of breast milk or the same quantity of Sibö (a mixture of equal parts of cow's milk and water, plus 8 per cent sugar).

Child B. Five months old. Sitting height 42 cm.

Nem. in one gram	RAW	COOKED	Weight of hn. in grams
13½	Beef dripping 0*, oil, pork, pork dripping		7.5
12	Butter 0, fat 0, marrow 0, margarine 0		8.5
10	Bacon 0.5		10
9	Nuts 1		11
8	Sweet almonds 1		12.5
6⅔	Fat sausage 1, chocolate 0		15
6	Cocoa powder 1, heavy cheese 3, sugar 0		16⅔
5	Condensed milk and sugar 1, cheese moderately heavy 4, fresh fat meat 2, fresh ham 8, yolk of egg 2, rice 1, wheat flour 1, vegetable flour, 1, biscuit 1, zwieback 1, syrup 0, honey 0	Suet puddings 1, fat pastries	20
4.5	Barley 1, shelled millet 1, shelled oats 1		22
4	Dry cheese 5, fat beef 3, blood sausage 1, dry vegetables 2, wheat bread 1		25
3⅓	Cream 1, bread 1, dry fruit 0.5, dry vegetables 0.5, dry mushrooms 3	Light puddings 1, marmalade 0	30
2.5	Cream cheese 6, fresh moderately fat meat 4, fresh fat fish 4, eggs 3	Cooked lean meat 6	40
2	Evaporated milk 2, lean fresh meat 6		
1.5	Horse meat 8, tripe 5	Double nutritive value; fat and vegetables	50
1.25	Fresh lean fish 8, potatoes 0.5	Cooked fish 8	66⅔
1	Mother's milk 1, cow's milk 2, grapes 0.5, green peas 2		80
0.6	White of egg 9, fresh fruit 0.5, treacle 0	Ordinary nutritive value; thick soup	100
0.5	Skimmed milk 4, French beans 2, carrots 1	Moderately thick soup	150
0.4	Turnips 1, turnip cabbage 1, cauliflower 2, fresh spinach 3, fresh mushrooms 3	Semi-nutritive value; thin soup 1	200
0.3	Sauerkraut 2		250
0.25	Tomatoes 2, asparagus 2		300
0.2	Lettuce 2, cucumber 2		400
0.1			500
		Meat gravy 3	1000

*This figure gives the approximate amount of albumen contained as compared with milk.

If the child needs the square of the sitting height

his

Maximum—

42 squared or 1,764.

Minimum—

$3/10$ (s. h.)² or 529 nems.

Optimum—

$3/10$ (s. h.)² plus

$1/10$ (s. h.)² for growth plus

$1/10$ (s. h.)² for fat plus

$1/10$ (s. h.)² for muscular movement

$6/10$ (s. h.)² or 1,058 nems.

Therefore, the child would need six-tenths of 1,764 or, roughly speaking, 1,058 nems per day. This would be divided among 5 meals, making it 211 nems per meal, in which case we would give him four feedings of either 210 c.c. of breast milk or its food equivalent in any milk mixture, as for instance Sibö. The fifth meal, which would come during the middle of the day, we will replace by a cereal which, on referring to the chart, you will see is of double concentration. Consequently, that feeding will contain 105 c.c. of cereal.

Child C. Twelve months old. Sitting height, 45 cm.

As the child needs the square of the sitting height his

Maximum—

45 squared or 2,025 nems.

Minimum—

$3/10$ (s. h.)² or 607 nems.

Optimum—

$3/10$ (s. h.)² plus

$1/10$ (s. h.)² for growth plus

$1/10$ (s. h.)² for fat plus

$1/10$ (s. h.)² for sitting movement plus

$1/10$ (s. h.)² for active movement (standing)

$7/10$ (s. h.)² or 1,417 nems.

Therefore, he would need seven-tenths of 2,025 or about 1,400 nems or 14 hrs.

This can be divided into three main meals of 400 nems each and a lunch in the afternoon of 200 nems.

For breakfast we will give him:

100 c.c. of cereal =200 nems
200 c.c. of milk =200 nems

Total 400 nems

For lunch we will give him

200 gms. of soup =100 nems
100 gms. of vegetables =100 nems
100 gms. of cooked fruit =100 nems
30 gms. of bread =100 nems

Total 400 nems

Two o'clock in the afternoon we give him

200 gms. of milk =200 nems

For supper we give him

150 gms. of cereal =300 nems
100 gms. of milk =100 nems

Total 400 nems

Total of entire day 1,400 nems

By this method one can rapidly estimate an infant's diet, not only in milk but also in solid foods, and be absolutely sure that the proper amount of food value is received. The use of the nem as the unit and the preparing of all foods, liquids and solids as well, in concentrations with mother's milk as the basis, is the key to the simplicity of this method.

There are many other valuable ideas in this system of feeding, but lack of space requires their omission, and the foregoing states what seems best applicable in general practice.

ENCEPHALITIS SIMULATING ACUTE ABDOMINAL CONDITIONS*

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In view of the fact that little mention is made of the possibility of confusing acute abdominal conditions with encephalitis, it is deemed worth while to report briefly the following three cases which were referred by competent physicians for surgical treatment. The first two simulated acute intestinal obstruction and the third was clinically an acute appendicitis and was operated upon. The problem of diagnosis is best shown by the following summaries:

CASE 1.—Mr. G. E. C., aged 56, male, married, journalist.

*Presented before the Minnesota Academy of Medicine, May 9, 1923.

Past History: Negative except for strangulated inguinal hernia ten years ago which was reduced without operation. Truss was worn for twenty years but was discarded three years ago. No operation or injuries. Habits good. Three children living, none dead. General health good until past year, during which he has been nervous and irritable. He had influenza in 1921.

Present Illness: The patient was admitted to St. Mary's Hospital on Feb. 16, 1922, and referred for operation with a diagnosis of intestinal obstruction. His physician wired me the time that the patient would arrive and asked me to be ready to do an immediate laparotomy. On entering the hospital the patient's history showed that his bowels had been sluggish for several years. He frequently went a week without bowel movement. He would then take magnesium sulphate and get relief. Upon entering, he complained of pain in the lower abdomen, rectal bleeding, anorexia and an inability to have a bowel movement. Sixteen days before admission, after taking a saline enema, he suddenly collapsed and his doctor found a small pulse and low blood pressure at that time. Repeated efforts during the last six or eight days were made to bring about a bowel movement with only slight success. The stools were "polliwog" shaped and the pain was persistent. A few days before entering the hospital the patient began to be somewhat delirious, although he was rational most of the time. He had been worrying a great deal during the past year and little attention was paid to his mental condition. He had vomited once during the last week after taking magnesium sulphate. He had complained of dysuria and the catheter withdrew 350 c.c. He had had no previous bladder trouble. Upon admission his temperature was normal. He was dehydrated, pupils contracted, as he had been taking morphine. Teeth unclean. Tongue dry. Fruity odor to breath. Some rigidity of neck muscles. No lung complications. The pulse was 70. Blood pressure 125-65. No edema. Abdomen was distended and tender but not very rigid. Urine showed hyaline casts, diacetic acid and acetone. A barium clyster showed the colon to fill normally. Laboratory tests were as follows: The blood on admission showed hb. 80 per cent, r.b.c. 5,400,000, and w.b.c. 8,000. A leucocytosis of 15,000 and 21,000 developed during the next two days with a differential of p.m.n. 76 and lymphocytes 24 per cent. On March 4, eighteen days after admission, the differential was p.m.n. 48, lymphocytes 45, eosinophils 3, transitionals 4 per cent. Blood chemistry on admission showed sugar .2 per cent; creatinin 2.2 mgm. per 100 c.c.; urea n. 18 mgm. per 100 c.c. Two days later the blood sugar was .07 per cent, creatinin 2.4 mgm. per 100 c.c. and urea n. 13.3 mgm. per 100 c.c. Van Slyke 56 per cent and no diacetic acid or acetone in urine. The spinal fluid one day after admission was sparkling, under pressure of 120 drops per minute and showed one cell per cu. mm. The blood Wassermann was negative. Blood cultures Feb. 20, Feb. 21 and March 2 were negative. Spinal fluid Wassermann negative. Colloidal gold negative.

As the diagnosis seemed doubtful, an operation was deferred. The patient soon showed marked delirium, so that restraint had to be applied. The rigidity of the neck muscles increased. The patient was given 4,000 c.c. of

saline hypodermically daily. Dr. E. L. Gardner was called in consultation. Encephalitis was suspected; also a possible bacteremia. Neurological findings, except those noted above, were negative for six days after admission, the stools were scanty and several clots of bloody mucus were passed. Bowel movements were involuntary and at times also was urination. The first formed stool was passed eight days after admission. After entering hospital the patient developed a temperature reaching at one time 103° F. with a leukocytosis reaching as high as 25,000. He complained constantly of headache, pains in lower abdomen, back and legs. He was seen by Dr. T. A. Peppard, who suggested x-rays of skull. These were negative. For three weeks the patient presented hallucinations and delusions, was often drowsy and incoherent and almost continually picking at the bed clothes. Ingestion of food usually caused vomiting. He had periods of severe collapse with Cheyne-Stokes respiration and digitalis was administered. Ten days after admission his neurologic findings were more marked, with sluggish knee and right ankle jerks; Babinski present on left; nystagmus of left eye on looking to right. Babinski was still present one week later.

The patient volunteered that everything prior to March 7, 1922, or for about three weeks, was "like a terrible nightmare," but he soon orientated himself, and his convalescence during the following month was uneventful except for several visits by the dentist. The foci were cleared very cautiously and without reaction. He was discharged from the hospital April 5, 1922, forty-six days after admission, with a diagnosis of encephalitis, much improved and has been editing his paper again for over a year.

CASE 2.—Mr. F. P., aged 27, Italian, carpenter, single. Admitted to St. Mary's Hospital with suspected intestinal obstruction and referred February 13, 1923.

Past History: "Rheumatism" for four months while in France with the A. E. F. in 1918, and otitis at eleven years.

Present Complaints: (1) pain in abdomen, (2) no stools for five days, (3) dysuria and frequency associated with voluntary attempt to move bowels, (4) sleeplessness for past three nights.

Present attack began a week before admission with generalized abdominal pain worse in lower abdomen, at times radiating down thigh and not localized in either side. He became definitely worse four days ago. Two days ago he took a large dose of Oleum Ricini and vomiting followed. He kept down a second dose, but had no bowel movement until today, when he passed a very small particle along with a very small amount of flatus. He has vomited on several occasions, but usually after Oleum Ricini or senna tea. The pain in abdomen has kept patient awake for past three nights and he constantly changed position striving to get relief. When first seen at the hospital he was on all fours in bed and doubled up as if in an attack of renal colic.

Previous attack: Three weeks before the present attack, the patient states, he had abdominal pain like the present and bowels did not move for three or four days, but he was relieved by taking Oleum Ricini, which was very effective.

tual then. He has been in the habit of taking some cathartic every few months.

Findings on admission: Temperature 100. Pulse 70. Respiration 20. Physical examination negative except for acetone breath. No abdominal distention. The urine showed glycosuria and diacetic acid and acetone. Operation was deferred. X-ray plates of both kidneys, ureters and bladder were negative. Feb. 13, 1923, a soapsuds enema resulted in the passage of small particles of stool and slight flatus.

Blood sugar 0.1 per cent; Van Slyke 52 per cent; w.b.c. 13,800. The following day the urine was free from sugar and acid bodies. Two soapsuds enemas returned clear and the patient continued to complain of abdominal pain, requiring codein. He was given a barium meal February 15 and fluoroscopic examination of stomach was negative. The meal was followed and found to pass without obstruction by serial plates up to fifty hours, at which time (February 17) the colon was empty, and a formed normal stool passed. Leucocytosis of 18,400 presented February 14, but this dropped to 10,300 the following day and remained normal thereafter.

The patient complained of "pain in his bladder region," of a "heavy feeling in his head" and persisted in getting up without permission and showed other signs of negativism, such as refusing nurses' care or to crowd liquids and on February 19 tried to leave the hospital.

On February 20, a spinal puncture was done and there were two cells per cu. mm. Nonne negative. Wassermann negative. The fluid sparkled and was under no pressure. Within six hours his temperature rose to 103° F., but at the end of twenty-four hours it was again normal. During this time the patient insisted on keeping his face covered and was quite morose. He complained of a headache and was restless. On February 23, ten days after admission, he was irrational and cried a great deal.

On February 24 he was seen in consultation by A. S. Hamilton, who gained additional history of "confusion in vision at one time," but no definite diplopia and an uncertain history of clonic convulsive movements in the right upper groin and of twitching of the eye-balls. When asked how he felt he would say, "As if to die"; "like crazy," or "Oh, Jesus, I don't know how." Neurologically there was slight ptosis of right eye. Patellar and Achilles feebly present only on reinforcement.

Diagnosis: Encephalitis or polioencephalitis.

The patient gradually improved, leaving the hospital without operation on March 4, 1923, nine days after admission and at this writing is again back at his labor and feeling well.

CASE 3.—Mrs. A. G. K., aged 23, and admitted to the hospital on Feb. 28, 1923, and referred by attending physician with a diagnosis of an acute abdomen, either appendicitis or salpingitis.

Past History: General health has always been good except for a "nervous breakdown" several years ago which was of short duration. No children or pregnancies.

Present Illness: On Feb. 26, 1923, two days before ad-

mission to hospital, she awoke at 2 A. M. after an attack of coughing and noted a severe generalized abdominal pain, most marked in the epigastrium. This persisted and during the two days following she vomited several times and was particularly nauseated on getting out of bed. The pain was not of menstrual type, although she has had dysmenorrhea regularly. Her last period, a month before onset of present attack, was normal. Bowels moved the previous day without cathartic or enema and there were no urinary symptoms. Examination on admission showed a well developed and nourished woman, with negative findings except for generalized tenderness of abdomen, a rigid right side and this more marked in the lower right quadrant. Reflexes were normal. Pelvic examination disclosed a moderate leucorrhea, a retroposed uterus and no evidence of tubal pathology. Her temperature was 102.6° and the w.b.c. 16,000. The urine showed a small amount of albumin and a few pus cells as well as granular casts. The blood pressure was 100/80. Cervix smears showed pus cells but no gonococci. She continued to have abdominal pain and this localized over the appendix and quite definitely by the end of the third day and it was thought advisable to allow the "acute appendicitis" to subside before operating. Menstruation occurred at the end of five days and at the end of six days her temperature was normal. At this time her epigastric distress was provoked by an enema and she again vomited and swallowed and belched a good deal of air.

On the seventh day a laparotomy was done and the appendix was found to show very little if any evidence of recent inflammation and the tubes as well were normal. The appendix was removed and the retroposed uterus suspended by the Coffey method of shortening the round ligaments. Uterine curettage disclosed normal uterine mucosa on microscopic examination. Nine days after operation the temperature again arose to 101° F. and to 103° F. four days later with persistent abdominal pains, nausea and vomiting. There was no evidence of a localized abscess. Six days later the temperature was normal, but the patient was found walking in her sleep to the other beds in the hospital or sleeping on the floor. During this time there was a persistent leucocytosis of 16,000, 19,000, 14,000, 11,900 from Feb. 28, 1923, to March 4, and 20,000, 24,000, 25,000, 18,000 from March 17 to March 29. She was discharged March 29, a month after admission.

Three weeks later she complained of inability to flex the right foot, walking with a limp and dragging the great toe. She also complained of a sensation of numbness of this foot. Sensation to sharp and dull, heat and cold and touch was not impaired. Plantar flexion was normal and the patellars were active. With complete rest in a splint this improved and when last seen, May 4, 1923, there was still a tendency to foot-drop and weakness of the flexors, but she was able to do her own housework.

Our impression, therefore, with very meager abdominal findings on actual examination, is that she probably was afflicted with an attack of polioencephalitis giving referred abdominal symptoms and finally manifest by the equally vague symptoms referred to one of her lower extremities.

ENCEPHALITIS LETHARGICA WITH CONSIDERATION OF THE INJECTION OF IODIDE OF SODIUM*

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St. Paul

From 1918 until recently there have occurred only sporadic cases of encephalitis lethargica. This winter, however, it has again assumed an epidemic character. Dr. Hammes estimates that perhaps a thousand cases have occurred in Minnesota. This estimate, I regard as too small. Small epidemics have been observed in different parts of the country. An outbreak of really serious proportions has been reported from Manitoba.¹ There were in Manitoba in January thirty-two cases; in February seventy-five cases (of which sixty-six were in Winnipeg) and thirty-eight cases in March—with a mortality of thirty-five. The outstanding features of the epidemic were: (1) frequency of severe peripheral pain in the beginning; (2) the frequency of myoclonic contraction, at times widespread, at other times local in character; (3) the probable serious and permanent disability of the sufferers in the way of a modified Parkinsonian syndrome.

Until the present recrudescence of the disease the attention of the profession has been centered upon the chronic form, the bizarre disorders of the respiratory rhythm, the bewildering number of physical and mental sequelæ—its latency with a subsequent manifestation after an interval of years of the Parkinson syndrome resembling in this respect the “para” phase of neurosyphilis.

Changes in personality following an attack of encephalitis occur both in children and adults; in the former one sees an intractable insomnia followed by character change with or without emotional outbreaks. Grossman calls attention to increase in weight associated with sluggishness, in children. These children are usually backward in their studies, inactive and drowsy. A lowering of ethical standards, according to Bassoe, may indicate a previous encephalitis. He also states that “there are not only post-encephalitic pseudoparkinsonians but also post-encephalitic pseudoschizophrenics, even pseudomorons.”

A vast literature has arisen; it has been estimated that since 1917 nearly 2,000 articles on this subject

have appeared.² In addition there have been four important reviews in book form, notable among which is the investigation just issued by the Association for Research in Nervous and Mental Disease.³ Encephalitis is a definite disease, not a syndrome. The microbe has a minute filterable form; its habitat is the nasopharynx; it is mildly contagious and the incubation period is about ten days. Its etiology is still a matter of controversy; the globoid bodies and the streptococcus have their partisans, but there is no consensus of opinion among research workers as to any exclusive view; until this has been attained, therapy must needs be empirical.

It was the splendid genius of Pasteur that pointed to the cause of hopeless illness: at his word infection no longer paralyzed the skill of the surgeon; no longer did its presence make maternity a deadly peril; “he transformed microbes from an instrument of death into an instrument of preservation.” Lethargic encephalitis awaits its Pasteur.

Wechsler's statistical study of 364 case reports is exceedingly interesting. There were three infants of four weeks; one man of 84 years. Males predominated in a ratio of almost three to two. Its incidence among physicians was very high, about sixteen times as frequent as among the average population. In only five instances were two members of the same family affected; to these may be added two hospital internes. Direct transmission is evidently very slight. Perhaps the most noteworthy fact was that among twenty-two pregnant women there were only four deaths. The striking contrast with the high mortality of influenza in pregnancy is very apparent. Bompiana states that pain, psychic disorders, paresthesias and pareses are more pronounced in encephalitic than in non-encephalitic pregnant women; that the mortality is greater in older patients and in multipara than in primipara; that unless the disease causes death there is no interference with pregnancy; and that in fifteen cases there was no abortion. Guillain and Gardin report the delivery of a normal child during the post-encephalitic Parkinsonian state. The condition of the mother was unaffected. Two such cases have been recorded. To Marinesco we are indebted for the interesting observation of a pregnant woman dying of encephalitis after an illness of three weeks. The brain of the fetus showed the typical pathological findings of this disease.⁴

As the influenza epidemic waned in 1918, I observed the first straggling cases of encephalitis in

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St. Paul. Wynn believes that the influenza weakens the resistance of the persons of the community; that an epidemic of influenza lowers the resistance to the epidemic of encephalitis. According to Wechsler, there are thirty-eight types of epidemic encephalitis. Clinical bewilderment grows correspondingly great. The futility of such an attempt at classification is apparent. Dana states that the dominant thing in classifying this disease is the mid-brain syndrome around which the disease groups itself. The symptoms are due to some trouble with the mid-brain and the motor nerves of the eye, especially the motor functions.

There are many bizarre and atypical forms. One of my patients had been regarded as a general paretic; before his illness he was a keen, capable lawyer; after, he lost all initiative, his mental mechanism was no longer responsive to will. His physician had advised his wife, because of the supposed nature of his disease, to obtain a divorce. Another patient presented a definite schizophrenic reaction. Investigation revealed an encephalitis, not a precox. In still another, in addition to the encephalitis, there developed a general multiple neuritis. Great difficulty may arise in differentiating the mental symptoms occurring in encephalitis from those of the psychoses.

According to the findings of the Association for Research in Nervous and Mental Diseases, the mental symptoms occurring in encephalitis are in the main consistent with those found in organic brain disease. At times the symptoms are very unusual and differ from those observed in other brain diseases. The symptoms are part of an acute organic psychosis and are not to be confused with other psychoses. This Association makes three groups: (1) the frank psychoses; (2) the psycho-neuroses; and (3) the changes in temperament and conduct disorders. Dr. Barker has seen several cases of apparent athero-sclerosis or paresis which turned out to be encephalitis. Dr. Kirby has observed some cases that in the beginning of their illness resembled paresis.

Since the Argyll-Robertson pupil occurs in encephalitis, its differentiation from that seen in lues is a matter of real difficulty. One or two of Grossman's patients had no other evidence of the disease anywhere. In order to clear up the diagnosis one must, he says, take into consideration the general picture and the Wassermann test.

I have recently seen two very interesting atypical

cases. One was an elderly woman who, seven years ago, had, while under our care, made an excellent recovery from manic-depressive insanity; about three weeks ago she again developed the classical symptoms of this disease; suddenly she became stuporous, with cranial nerve involvements and myoclonic twitchings, death occurring within a few days. The second case, referred to us by Dr. Cremer, of Hastings, became acutely disturbed. Her symptoms were typical of an involutional depression. There was a history, however, in the early stage of her illness, of her eyes turning up and a drooping of the left upper eyelid and also drooping of the left side of the mouth. This was of short duration. All during her illness there has been a slight temperature, which might have been due to the imperative nature of her delusions. The blood sugar and the spinal fluid findings were negative. Her resistiveness made a neurological examination impossible. A later examination of the spinal fluid gave a slight globulin; the leucocyte count was 15,000; there was also a double Kernig with a spasmodic rigidity of the neck muscles. There have occurred, within two days, attacks of stupor of hours' duration. The patient's appearance was that of a catatonic stupor. She was image-like, immobile, could not be aroused, looked as if she were dead. The stupor of the English epidemic and similar cases described by Nonne in the Hamburg epidemic, Barker thinks, seemed to belong to this type. The nerve trunks and muscles were very sensitive to pressure, the slightest touch causing her to cry out with pain. Hunter emphasizes peripheral pain as an outstanding feature of the Manitoba epidemic. In these patients is the encephalitis an epiphenomenon or is the mental picture that of an acute organic psychosis?

Dr. Farr's observations on the surgical relations of this disease are of great interest. In a case referred as intestinal obstruction, the bowels had not moved for three days. The abdomen was greatly distended with gas; there was terrific pain but no abdominal rigidity. There were some mental symptoms which later developed into an acute mania followed by lethargy and subsequent recovery. Farr has found that encephalitis may simulate surgical conditions and he states that he has about reached the conclusion "that all suspicious cases that come to us—that is, all cases that are not definitely things that we can nail down as entities, we call encephalitis until they are proven otherwise."

A brief history of a case of the myoclonic type is not without interest. W., aged 59, referred to me by Dr. Hoyt of Glasgow, Montana, retired on the night of January 2nd, seemingly in excellent health. At 2 A. M. he was awakened by violent muscular twitching in the right inguinal region. The myoclonic contractions were painful, persistent and severe; sleep was impossible; medication gave no relief. When I saw him several days later they had extended to the abdomen and the lower extremities; the upper extremities were but slightly involved. His appetite was good; his mind unimpaired; there was no temperature the first twenty-four hours. The neurological examination was negative, as were also the serological findings. A week after entering the hospital, he said he felt fine aside from soreness in the area of twitching; there was, however, mental confusion and irrational talk, of nights, with memory defect. Then marked improvement occurred and convalescence seemed imminent. Suddenly there developed difficulty in swallowing; he became first lethargic, then comatose and died twelve days after entering the hospital. Perhaps one of the most striking of these patients was a young man who had experienced a mild but unrecognized attack of encephalitis; for weeks he slept night and day; if he sat down for a moment he immediately fell asleep. There was a distressing asthenia, the slightest exertion causing exhaustion. He was told he was hysterical—that there was nothing wrong with him.

The Boston Transcript once referred to the League of Nations as "that evil thing with a holy name." Hysteria is that evil thing with a venerated name. It is a syndrome, a disease of personality, not a definite disease. As a diagnosis of disease, it has no standing in medical court. It should be tabooed. Charity covers a multitude of sins—hysteria abysmal ignorance.

In 1896, I spent some time at Queen's Square, London. This was in the day of Bastian, Buzzard, Beevor, Ferrier, Gowers, Hughlings Jackson and Victor Horsley—the golden age of British neurology. I saw an unusual number of cases of multiple sclerosis which I was informed were sent into the hospital with the diagnosis of hysteria; but hysteria is not the only disease that is a masquerader. The same is equally true of encephalitis.

Recently, I saw in consultation a case where skillful neurologists—all clever diagnosticians—differed as to a diagnosis between brain tumor and encephalitis.

Last December, the patient, a man of forty-three years, was rendered unconscious by a blow on the head with a blackjack. Several years ago he had been struck on the temple by a 200-pound weight. There had been no ill effects—not even a headache. About the middle of last December, he observed an awkwardness in manipulating the pedal of his automobile with his right foot. Two weeks later slow rhythmical contractions occurred in his right foot and leg; there followed loss of power in the leg and foot-drop. These rhythmical contractions gradually extended up the thigh and abdomen, to the arm and fingers and face; they were of an athetoid character and occurred at intervals of several days. For a month there was a marked lethargy. There was severe headache; at times delirium; occasional vomiting—not of the projectile type; the optic discs were pale but not choked; there was no disturbance of sensation; speech was unintelligible, although at times he could enunciate a few words. The spinal fluid was under pressure, but, aside from a marked Nonne, otherwise negative. When I saw the patient there was a flaccid paralysis of the right side, a definite Babinski of the right foot, no ankle-clonus, a Parkinsonian face, headache, and occasional vomiting spells. The spinal fluid showed great pressure; Nonne plus one; 19 cells per cu. mm.

To me, this case was an encephalitis simulating a brain tumor. Serological findings are important but not decisive in diagnosis, as in 50 per cent of the cases of encephalitis they are negative. The cases of Sands⁵ show that optic neuritis and choked discs, although uncommon, do occur in encephalitis. He quotes the case of Ubrantschitsch, in which there was intermittent bilateral choking of disc, and the four of Symmonds, in which optic neuritis was associated with diffuse lesions of the nervous system.

Ever, one should keep in mind the statement of Bassoe that "tumors of the third ventricle and basal ganglia may be clinically identical with encephalitis—the same being true of localized basal meningitis with extension to the third and fourth ventricle." Never for a moment did I forget Geiger's remarkable case in which the diagnosis both anatomic and clinical was unquestioned until the *bacillus botulinus* was isolated from the medulla oblongata. Bassoe truly says "that no disease makes greater demands on the all around knowledge of the diagnostician than epidemic encephalitis."

The following case contains much that is of inter-

est especially from the diagnostic and therapeutic standpoint:

A., aged 45; father died of bronchial pneumonia in 55th year; mother now in 65th year and, aside from migrainous headaches all her life, is well; one sister and three brothers well; has had three attacks of pneumonia; blood poisoning 20 years ago; appendectomy in 1905. An epithelioma of the lip was removed twelve years ago. He had his first attack of migraine when sixteen years old and they have increased in severity and frequency. For the past nine months, A. has never been free from headache and it was because of this he consulted me. He has had three attacks of influenza—1918-1919-1920. These left him markedly asthenic; this condition has progressively increased up to the present time. Not only has there been a constantly increasing headache but associated with this during the same period has been a persistent lethargy; migrainous attacks have been of frequent occurrence lasting from 12 to 24 hours. Mental reflexes are sluggish and memory is markedly affected; the face is expressionless; there is vertigo, constant sighing and great irritability. For the past year, A. has noticed a slowness and clumsiness of the muscular movements of his left arm and leg. This was associated with a distinct loss in power; sharp stinging pain was of common occurrence in the affected limbs and the left chest. Deep and superficial reflexes normal; no impairment of sensation. Dynamometer—right hand 95 degrees; left hand 25. Chronic catarrhal otitis media, non-suppurative, of both ears. Backgrounds of both eyes normal. Hemoglobin 100 per cent; red blood cells 5,680,000; white blood cells 6,100; urine negative; blood pressure 159 systolic, 100 diastolic; serological findings in blood and spinal fluid negative.

I have records of two similar cases that did not continue under observation. Several things are worthy of note in this patient; there was no acute attack; the onset of the disease was insidious and slow. A. believed himself to be suffering from an unusually severe form of migraine. The sharp acute attacks of pain were quite characteristic of his migrainous seizures but what A. could not understand was the constant headache persisting between them. On first glance, I thought it was one of those rare phases of migraine analogous to the status epilepticus. Observation showed this was not the case. The failure of memory, the mental dullness,

the severe headache, the hemi-paresis suggestive of the involvement of the adjacent motor region lacks only the rotation of the head and eyes and purposive movements to conform to the classical description of a frontal lobe lesion as described by Hughlings Jackson. I have repeatedly emphasized asthenia as a cardinal symptom of encephalitis. Dr. Ball has recently reported four cases where it has manifested all the characteristics of a myasthenia gravis. The sense of exhaustion in this patient was one of the first symptoms; it was persistent and progressive. The serological findings were negative. Their significance in this affection is regarded as problematical although Eskuchen states that there are two spinal fluid syndromes which may be considered fairly characteristic (Bassoe): (1) pleocytosis, globulin increase, luetic gold curve, hyperglycorrhochis (sugar increase); (2) cell globulin dissociation (high cell count in proportion to the amount of globulin); luetic gold curve; hyperglycorrhochis.

Thalhimer and Updegraff⁶ tell us that the sugar content of the blood and spinal fluid is increased in epidemic encephalitis but that there must be a wider extension of our knowledge of the amount of sugar in normal and pathologic spinal fluid before its diagnostic significance can be determined; that at present its chief use lies in the differentiation of encephalitis from tuberculous meningitis and early poliomyelitis.

Dr. Kraus believes that the tetrad of symptoms—increase of cells, globulin, sugar with changes in the goldsol curve, is of diagnostic importance; that the most important single feature is "the quantitative sugar determination." The reports in literature of spinal sugar in other diseases being so few, this statement should be taken with reservations. The sugar test is of importance during the entire disease. There is no characteristic goldsol curve. That of paresis frequently occurs; also a type of low curve suggesting that of meningitis. To me the important thing is not the type of the goldsol reaction. The significant thing is the fact of its occurrence showing as this does a parenchymatous involvement.

My thought in reporting this case is to call attention to the rather remarkable effect of the intravenous injection of sodium iodide on the Parkinson syndrome and the headache. The Parkinson syndrome is of common occurrence. Hunt has ob-

served it as early as the second year; its occurrence in young people from the eleventh to the fifteenth year he thinks is not uncommon. He described fragmentary types, namely, cases in which the only symptom was that of the mask-like face; cases in which there was paralysis of the lower extremities, the upper not being affected; tremor of the head with the expressionless face, there being no other symptoms; but the hemi-form I believe to be rare. It is not unusual for the character of the illness, as in this instance, to go unrecognized until this syndrome has made its appearance. Without doubt, many cases of apparent paralysis agitans are really the Parkinson syndrome of an encephalitis which have escaped recognition. Dr. Hunt regards this late paralysis agitans type "as a recrudescence of the inflammatory process rather than a slow degeneration." It may develop during the attack or several years later. Catalo states he has never seen a recovery. Courtney, on the other hand, says he has observed recovery once. Taylor says that the paralysis agitans types, so far as he has seen them, have steadily improved. Ramsey Hunt tells us that the consensus of opinion is that this group tends to improve—even to get well. About four weeks ago, A. had a mild influenzal attack; before its occurrence the Parkinson symptoms had practically disappeared; there were aberrant pains in the left side, but they were slight and insignificant; the power had returned to the arm and leg. This illness lasted ten days; before this the headache had ceased; afterwards it returned, especially behind the eyes and at the bridge of the nose; the power in the leg was not affected; that in the arm was noticeably impaired. The old shooting pain in the side, arm and leg came back; while the Parkinson characteristics are no longer apparent, the associated sensory manifestations are very much in evidence, although they are gradually growing less.

The researches of Goldstein, Foix and McKinley⁷ seem to indicate the relation of lesions of the substantia nigra and to a less degree those of the lenticular nuclei to the evolution of the Parkinson syndrome. According to Souques, Parkinson's disease is not a disease, not a morbid entity, but a syndrome which may be due to a number of different causes which act upon a certain localized portion of the nervous system. He stresses the importance of the substantia nigra and the value of encephalitis and its lessons in the evolution of this concept. It

is not the nature of the cause nor the variety of lesion, but the topography of the structures involved upon which one should focus attention. The clinical picture may be modified by certain specific causative factors. This is of secondary value. The important thing is to keep in mind the facts of anatomical locality. It was this conception of the pathology of this syndrome that suggested to me the use of intravenous iodide medication, the use by mouth having been proved futile. The result in this case was at least a pleasant surprise—namely, the disappearance of the Parkinson syndrome.

Recently, Dr. T. J. Glasscock, of Finley, North Dakota, used, at my suggestion, this intravenous medication in an acute attack of encephalitis where the outstanding symptom was that of Parkinson, with the most gratifying result, the syndrome disappearing, aside from the mask-like face. Perhaps these observations are a chance happening—a hitherto unrecognized phase of this protean symptomatology, or perhaps this form of administering the iodide relieves "the persistence of fully active inflammatory lesions" as observed by Foix.

Headache, also a cardinal symptom, is rarely absent in the chronic type of encephalitis. It is persistent, agonizing, intractable; the pain may be so severe as to cause suicide, so unnerving, so terrifying as to give rise to an acute depression. Rest and lumbar puncture greatly ameliorated it in the case of A., but no positive relief was obtained until we used the iodide intravenously. At first the injection greatly increased the pain, which lasted for about a week. Dr. Hengstler suggested that lumbar puncture be made at the same time; it was a happy suggestion, there being no pain when the iodide was administered in this way. After definite improvement occurs, the puncture may be discontinued. One thing should be emphasized—the puncture must be made at the time of the injection. Headache does not necessarily follow an intravenous injection of sodium iodide.

Dr. Hammes tried sodium chloride tablets for three and a half months in one of his cases of encephalitis for relief of headache; there was some improvement, but it still persisted; he then administered iodide intravenously with slight improvement, but the headaches continued. The last injection was given February 13, 1923. On the 23rd the patient had a severe headache, which lasted for three days. There have been only slight attacks

since; the patient has returned to her work and is apparently well. It would appear as between three and a half months of chloride of sodium and four injections of iodide, honors were even. A patient of Dr. Hengstler's, prior to the injection of the sodium iodide, complained continually of the grinding pain in the calf and foot of the left leg, also in the foot of the right leg; there was pronounced nerve trunk tenderness and hyperesthesia in the post-tibial nerve group of both legs and over both feet. From the first injection of sodium iodide the pain stopped and the patient improved steadily until now, after the fourth injection, there is no nerve trunk tenderness and the hyperesthesia has entirely disappeared.

Cheinis⁸, of Paris, deprecates the overuse and the prevailing idea with respect to the harmlessness of intravenous injections. He quotes Pery's case where, following an intravenous injection of urotropin, there resulted hematuria, epistaxis and pulmonary congestion with hemoptysis. He points out that certain substances such as sodium carbonate and calcium chloride are especially irritating to the perivascular tissues and advises great care so as to avoid an escape of the injected drug into the subcutaneous tissues. Other substances like sodium iodide solutions have the disadvantage of causing induration of the veins. Personally, our observation does not confirm this view, as regards the iodide.

A distinguished Baltimore surgeon said to me during the days of my internship, that pain would kill. The observation of the years has confirmed the statement of this keen-visioned physician. Nothing was known at that period of the rôle played by the instinctive emotions. The revelations of Cannon, Crile and their co-workers lay in the lap of the future.

As a dynamic, pain is more powerful than emotion; its destructive effect on the nervous system is more marked; in great severity it is lethal. If such a simple procedure as an intravenous injection of iodide associated with lumbar puncture can relieve suffering so intolerable (for pain is always a human tragedy), not only is it a great boon to the patient but it lessens by just so much the menace overhanging the encephalitic.

"Happy is he who has learnt the value of research," says Euripides; its importance has certainly been appreciated as is shown by the intensive

studies made by research workers in the investigation of the morbid anatomy of epidemic encephalitis. The Commission of the Association for Research in Nervous and Mental Diseases, in their studied was too small to permit of final deductions; recent report, state that the number of cases they that only an outline of the entire pathological process of the disease could be made at the present juncture, and that a "statement that there is a complete specificity in the pathological process of epidemic encephalitis" is not warranted. Pathologists, generally, are in accord that the basal ganglia and the nuclei of the cranial nerves are the points of special selection by the virus. Naturally, one would expect in encephalitis to find marked involvement of the cerebral and cerebellar cortex, but just the contrary is the fact. Ayer says that he has not observed a single case where the cortex was affected as much as the other parts. The investigation of the cortex, according to Tilney, has been inadequate and he believes that "we cannot guarantee any statement as to the relative cortical involvement." The cortex being negative, Sachs thinks the important inference would be that lethargy does not depend upon the cortex.

The Commission also state that the most that can be said with regard to the endocrine organs is that "from the limited findings the evidence of pathological alteration seems almost negligible." It would appear then that the pathology of this disease is yet to be worked out.

The clinical picture is so varied, so markedly different in the three epidemics, that with our present knowledge ultimate prognosis is a matter largely of conjecture. Grossman estimates that less than 20 per cent die during the acute attack. Of those that survive the acute illness, 10 per cent manifest progressive disease of the central nervous system. The remainder make a functional recovery in from six to twenty-four months, with a tendency to progressive improvement after that period. Stephenson states that the grosser the tremor in the Parkinsonian and spinal types, the more rapid the improvement and that the cranial nerve and diplopia type offer the best outlook.

The treatment of encephalitis being empirical and expectant, the results are necessarily disappointing. This must not be permitted to lead to nihilism in therapeutic endeavor. Palliation is imperative where cure is impossible.

Some medical man with genius and a daring imagination will some day envisage the etiology of this disease just as has been accomplished in epidemic cerebrospinal meningitis and again the apparently impossible will have been attained. The Commission appointed by the Association for Research in Nervous and Mental Diseases states that it "feels itself constrained to make no report upon the merits of any particular method of combating the disease—not knowing the causative factors involved in the pathogenesis of epidemic encephalitis it becomes impossible at present to outline a rational therapy."

The sheet-anchors of treatment are lumbar puncture,* the intravenous injection of sodium iodide and of sodium chloride together with nervous sedatives. Dr. Whitmore tells me that he had the opportunity of observing about three hundred cases of encephalitis lethargica in which Economo used a colloidal potassium iodide solution intravenously. In some there was improvement; in others none.

Certain Baltimore physicians, so Dr. Foley informs me, are using the hypertonic salt solution intravenously during the more acute stages of encephalitis and particularly in cases exhibiting irritative phenomena and in those with very severe headache. The rationale of this procedure is based on the well-known physiological fact that hypertonic sodium chloride solution given intravenously causes a fall of the cerebrospinal fluid pressure and decrease of brain volume owing to dehydration of brain substance.

The probable explanation of the relief of symptoms—headache, twitching, etc.—is that the cerebrospinal pressure in general is lowered and the fluid contained in the tissue spaces of an edematous area, the perivascular drainage of which has been obstructed by cell infiltration, is absorbed back into the blood stream. Unskillful administration may give rise to very serious consequences. Dr. Foley states that the apparently effective dosage is from

80 to 150 c.c. of a 15 per cent solution. It must be given slowly—about five c.c. per minute. Signals for slowing the injection are sensation of heat and tingling in the extremities and about the face and lips, increasing pulse rate and slight dyspnea.

A patient of Dr. Hengstler's, during a very severe attack of lethargic encephalitis, contracted facial erysipelas. When convalescence occurred from the latter, all symptoms of the former had disappeared. Should credit for recovery be given to the influence of a foreign protein or to the leucocytosis and consequent immunization due to the erysipelatous infection?

Artificial leucocytosis (fixation abscess, nucleinates) has proved futile as has the injection of cacodylate of soda. Equally disappointing has been the subcutaneous injection of the patient's spinal fluid, the intraspinal injection of the patient's blood serum and the intraspinal injection of convalescent serum. Bérrel says that there is no proof that the use of hexamethylenamin has any value notwithstanding the striking results reported by Drs. Thomas and Reud. The benefit to be derived from serums specific and non-specific remains to be determined. Massage should be used in the chronic form of the disease only. The infection is as treacherous as it is deadly. Death may suddenly end an apparent convalescence, or, after the patient has been seemingly well for a year or more, unexpectedly the previous symptoms flare up and the patient succumbs. Seemingly convalescence then may be an illusion of hope—apparent recovery a fool's paradise.

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*Since the reading of this paper, there has been a case referred to me by Dr. A. E. Walker of Duluth, in which there was a temperature of 105.3 degrees, delirium, intractable insomnia, coarse tremor in both arms and hands, with pain in chest just below the clavicle and in the right lower extremity. There was marked stiffness in both upper and lower extremities; could raise the arms with great difficulty. There was also myoclonic twitching of the facial muscles. Baths failed to reduce the fever. Benefit from lumbar puncture was almost startling; relief was apparent from the first spinal drainage. This was done on alternate days. Within a week the fever had disappeared; the tremor was greatly improved; myoclonic twitching of the facial muscles ceased; delirium passed away and were it not for the treacherous nature of the disease one would think convalescence was at hand.

EPIDEMIC ENCEPHALITIS: SOME OF THE MORE UNUSUAL OF ITS WIDELY VARIANT SYNDROMES*

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Since Economo, in 1917, called attention to a "new disease" which he designated as lethargic encephalitis (followed early in 1918 by the work of Netter, Harris and Hall in England), current medical literature has teemed with articles dealing with various phases of this remarkable affection. Most observers have endeavored to classify this disease under different type headings, largely based on resemblance to other diseases of the nervous system, one writer presenting fourteen different group pictures. This only serves to add confusion to the bewildering, frequently changing, disappearing and reappearing, symptoms of a disease entity so multiform, incongruous and contradictory as to make any effort at definite type-classification futile; for a single case may present the manifestations of several different so-called types during its course.

What relationship, if any, encephalitis bears to influenza is not yet fully determined. E. Bramwell thinks the burden of proof is against any whatever. However, the two diseases have occurred in close sequence, spread similarly in a world-wide distribution, and many cases that finally prove to be encephalitis have a typical influenzal beginning,—including the peculiar heavy fetid odor not present in any other disease. During the early months of 1923 there was an extensive though mild epidemic of influenza and a pronounced increase in the number of cases of encephalitis, in some localities assuming epidemic proportions. Kling, Davide and Liljenquist have apparently demonstrated a separate specific pathogenic agent in the spinal fluid and blood of individuals affected, the injection of which reproduces the clinical picture in guinea-pigs and rabbits. It is described as a filtrable virus, transmissible in series to a limited degree and susceptible to culture. Zannelli found on experiment that the normal nasal mucosa resists invasion, but obtained positive results when resistance was lowered by chilling the surface. This may have a bearing on the usual seasonal incidence of the disease. Yet all cases do not occur in winter.

The virus shows exclusive affinity apparently for the central nervous system, more especially the basal ganglia and the brain stem. It may, however, attack any part of the brain substance and also at least the upper spinal cord segments. In some cases, too, the clinical picture would indicate that the lower cord regions may also be involved, in rare instances simulating cord tumor, like the following:

Mrs. L., aged 43, had a uterine fibroid removed in December, 1920. In August, 1921, she began having very severe pain in the lower back, flashing and radiating out over left hip, with some muscular spasm. This pain later extended across the sacrum, down the right leg to the knee and around over the abdomen. Although x-ray plates were negative, Dr. Sohmer, who had removed the fibroid, suspected malignancy and removed the cervix in September. The patient lost flesh rapidly. Six weeks later she visited the Mayo Clinic, where physical examination was negative, but a neoplasm was suspected.

This patient came under observation Nov. 30, 1921, at which time she was much emaciated. The left patellar reflex was greater than the right. An area of paresthesia was present about the right knee. She was sensitive over the right sacro-iliac joint. Deep pressure over the lumbar plexus caused shooting pain down the anterior crural nerve. Two weeks later she developed severe headache, active delirium and vomiting. Temperature 100°. The patient cleared mentally after three days, the delirium recurring later. Pain in back and legs was extreme. The Babinski was present on the left. Attacks of stupor supervened. Dimness of vision, hallucinations of sight, dysarthria and dysphagia followed. The fundus was normal. Spinal fluid was negative, except the colloidal gold,—001344432. Severe pain in the back and legs was the predominant symptom throughout. The patient died Jan. 6. Respiration continued after the heart had ceased.

Another case resembling cord tumor was Mr. P., aged 37, married, who came under observation Sept. 25, 1922. The previous March he began to have numbness in toes, some temperature for a time, a feeling of tightness in the knees, the numb feeling gradually creeping upward to the trunk. A feeling as though snakes were crawling about in the abdomen was complained of, with peristalsis visible. The legs grew gradually weak and he had been able to walk but little since August. The cramp-like pains occurred in the abdomen with involuntary flexion of the thighs. A feeling of tightness in the chest and difficulty in full respiration occurred. There were numb feelings in the fingers at times, much spitting, difficult micturition. Abdominal and cremasteric reflexes were absent. Patellar response was highly overactive; ankle clonus was present. Marked Babinski and Throckmorton. No objective sensory changes were noted. There was a spastic, ataxic gait and marked ataxia of station. Joint and muscle sense was reduced. A heavy fetid odor about the body like that of influenza was noted. Spinal serology was negative. The course was slowly and relentlessly progressive up to the present. He had marked spasm of the leg muscles which were highly

*Read before the Hennepin County Medical Society, June 11, 1923.

painful. At times he was unreasonable and mentally disturbed. Attacks of extreme cephalalgia and vomiting occasionally occurred. He is now under observation, but apparently approaching a fatal termination.

Cut surface of the brain substance presents only slight departure from the normal appearance. Minute petechial points are seen which are usually dilated vessels, but occasionally small hemorrhages. Under the microscope there is extensive round cell infiltration about the vessels, dilatation of the perivascular spaces and interstitial edema of the brain substance. In the examination of earlier cases some pathologists missed these conditions altogether and reported negative findings. Some degree of chromatolysis has also been observed but without actual destruction of the ganglion cell, which latter accounts for the complete and at times astonishingly rapid disappearance of the qualitative changes in the deep reflexes. The exact avenues of transmission and invasion of the virus are not known. The disease is commonly considered not contagious, but instances are recorded where several members of a family have been stricken, and in one case a nurse contracted the disease while in attendance on a case of encephalitis.

No other disease process affecting the nervous system presents anything approaching the widely varying syndromes found in cases of epidemic encephalitis; nor such manifold or rapidly shifting features in the same case; nor one that masquerades in the guise of so many other affections of the nervous system, both functional and organic. And while no other disease presents so many difficulties in diagnosis as does this protean complex, the fact is that, while it offers a very close resemblance to one or another condition, careful study and comparison will show either some incongruity, some essential symptom lacking, or a superabundance of elements, thus offering a definite aid to differential diagnosis. In many cases exact determination is possible only after long continued observation.

Sex and occupation have no bearing on its incidence. Chiefly of cold weather seasonal occurrence, it still is known to develop in summer, several in this series beginning between May and September. Most cases are found in the middle decades of life, but it also occurs in young children and the aged. The ages of those here considered range from seven to seventy-six. Some consider it rare in children; others find it occurring frequently with them.

The writer has seen only two. One of these already reported* may be briefly summarized:

Paul P., aged 7. Mother neurotic. In January, 1919, parents first noticed a tendency at times of the eyes to cross. He showed general malaise. The strabismus increased. Then trouble with speech. Some vomiting. Seen in consultation with attending physician, Dr. G. M. Doran, on Feb. 22, 1919. Marked internal strabismus of both eyes. Slight phonation. No lethargy. Tongue not protruded. Incoordination of arms. Pendulum swaying when sitting. Cannot keep his feet, staggers in all directions. Patellar response overactive and equal. No clonus. Great toes show extensor response to all tests. No nuchal rigidity or Kernig sign. No elevation of temperature. The following day he developed dysphagia, inhaled liquids, and respiration failed.

So many cases of the more usual symptom groups have been reported, and the congeries presented are so many, that no time need be here taken to detail individual symptoms of these, whether referable to the psychos, the sensori-motor distribution, or the vegetative nervous system, depending on the location of the points of attack of the focal invasion. Therefore, only a limited group of cases showing either rare or unique individual symptoms or pictures (in addition to the two cases simulating cord tumor presented above) has been chosen for presentation at this time.

A case briefly referred to in discussion of a paper** by Dr. House presented perhaps the most unusual picture so far observed by the writer:

Arthur S., aged 30, farmer, was referred by Dr. McDougald of Le Sueur, on Oct. 18, 1920. Neurotic family antecedents. He had been gradually losing flesh and running down the past two years. Unable to do much work the past three months, he tired very easily, lacked appetite and complained of a sour taste in mouth. Frontal headache of late. Mentally depressed. Pupils dilated, equal, react. Convergence poor. No nystagmus. Expression dull. Slight tremor of hands. Reflexes all sluggish. Temperature normal. Pulse 68. Blood pressure 110/70. Chest and abdomen negative. Conditions remained about stationary for several weeks. Developed constant spitting of fluid saliva. Marked cephalalgia unrelieved by any medication. Speech somewhat slow. Walking about room one day, he fell flat on his back. Wanted to go home and thought he was able to do so. Began to complain about being unable to see. Fundi examined by Dr. G. E. Benson, who found marked double choked disc. Suddenly developed parietic condition of whole left side with heightened reflex responses including extension of great toe to Babinski and Crafts tests, all of which gradually cleared up. Spinal puncture showed the fluid under some pressure, otherwise negative. The choking of the discs, however, very definitely receded after the puncture and did not again

**Jour. Am. Med. Assn.*, vol. 73, p. 267.

***Jour. Am. Med. Assn.*, vol. 79, No. 3.

increase. Staggered in walking and tended to fall always backward. Was seen in consultation also by Dr. Corbett, with tentative diagnosis of cerebellar neoplasm. Hebetude increased. The sphincters were involved. Continued retrogression. Double suboccipital decompression was done by Dr. Corbett. Puncture of the dura showed the fluid under some pressure. No tumor found. Autopsy showed the usual findings of epidemic encephalitis.

For several months at the onset this man had presented only a simple neurasthenic condition, showing how slow and insidious the development of the disease may be. The recession of the choked disc following spinal puncture and drainage, and no further increase over a considerable period, raised a decided question of doubt in the writer's mind as to the presence of a tumor. No record, however, could be found of its occurrence in encephalitis, and operation appeared clearly indicated. It is an exceedingly rare symptom. House, in reporting on 145 cases, does not mention it. Kennedy, in a recent review of the subject, does not include it. And the only reference so far found anywhere, is in a recent discussion by Dr. Grinker. Its recession following puncture in this case may prove to have decided diagnostic value in future cases. It has been held by some that increase of the normal content of sugar in the spinal fluid is an important diagnostic factor, but cases are observed in which there is a definite reduction in this element.

There were several other cases which also showed choked disc and greatly resembled brain tumor, and were so diagnosed by one or more observers.

One of them, C. F. M., aged 46, tailor, with a decided nervous trend in family, began having extreme frontal headaches in July, 1921. They continued and increased. He was very nervous. He took an automobile trip of 1,500 miles and nearly drove off road several times. Came under observation on Sept. 22, 1921. Quite marked general tremor. Walked automatically. Some incoordination. Pupils dilated, equal and reacted fairly. No material change until October 23, when he suddenly became unconscious and remained so for seven hours. Dizziness accompanied the headaches. Vomited at intervals. Unconscious again on the 27th, with stertorous respiration, relaxed left face, right pupil large and not circular. Left forearm rigid and flexed. Reflexes increased on the left side with ankle clonus and Babinski. Double clonus the next day and extensor response of both great toes to Babinski, Crafts, Oppenheim and Gordon tests. Rigidity and clonic tremor of left arm. Leucocyte count varied between 5,000 and 13,000. Spinal fluid showed no pressure, 4 cells, otherwise negative. Choked disc in both eyes. Was mentally brighter day following puncture. After three days reflexes returned to normal. Marked eruption on back, probably herpetic. Saw "stars and drapes" all

about him and objects on the wall. Repeated lapses into unconsciousness with Cheyne-Stokes respiration and bradycardia, profuse perspiration, frequent yawning, dysphagia and irregular rise of temperature, delirium of alcoholic type. Temperature rose to 106.2°, pulse to 176 just before death.

The third case presenting choked disc was of a young man, seen in consultation with Dr. Geo. E. Benson, in October, 1921. The previous winter he had what was considered an influenzal attack accompanied by headaches and dimming of vision which persisted. Examination showed double choked disc, which with headaches and dizziness continued. Right parietal decompression was done by Dr. Corbett. There was marked pressure followed by decided hernia cerebri. But no tumor could be located. The wound healed, and the hernia completely subsided. Vision cleared to practically normal, and all choking of the disc disappeared with all subjective symptoms. In this case, of course, certainty of diagnosis may be questioned. But, considering the whole picture, there is little room for doubt.

Another patient, Mr. W., aged 68, presenting a complex also resembling brain tumor, in which an internist had made an elaborate diagnosis of primary cancer of the liver with metastasis to the brain, came under my care on July 10, 1921. Sharp shooting head pain had begun the previous April. No sleep night or day. Was somewhat "dumpish." There had been some delirium and hallucinations of sight. He was uncertain on his feet and would stagger. Headaches had improved somewhat in June, but vision was growing dim and suddenly became completely blind on July 1. When first seen he was extremely emaciated. Face lacked expression. Reflexes normal. Headaches gradually disappeared. Regained his flesh and general health. Dr. C. D. Wright reports the fundus showing complete simple double optic atrophy, such as is found in lesions of the optic paths, with no indications of pressure.

Another man showing a similar condition, with diagnosis not altogether certain, was referred by Dr. Leavitt. Mr. L., seventy-six years old, was seen on Jan. 3, 1922. A week previously began having very severe frontal pain, worse when lying down, and preventing sleep. Two days before, he noticed dimness of vision in the right eye. Had been somewhat dizzy the past four days. The headache had diminished since reduction in vision developed. Vision fairly good in left eye. Tends to walk to the right. Right pupil dilated. Reflexes negative, except for reduced plantar response, on the left. Urine normal. Pulse 100. Blood pressure 145 systolic. Vision failed rapidly in the left eye following the right, with complete blindness. Headaches disappeared. The fundus showed only complete simple double optic atrophy.

Another case, Mr. B., aged 43, merchant, referred by Dr. C. M. Kistler, shows a verisimilitude to brain tumor. In December, 1922, he began to notice difficulty in control of the right foot; then, without warning, an attack of muscular spasm confined to the lower leg and foot. There was diminution of power in the whole leg with some foot drop. No sensory disturbances. Yawned a great deal at this time. The spasms recurred at intervals of several days, advancing gradually up the thigh, abdominal parietes and

the arm. The arm became almost powerless for some days, when it suddenly regained good movement. At the same time the leg improved gradually in power. The great toe showed the Babinski, Crafts and Throckmorton responses. There has never been any ankle clonus. The discs at first showed nothing but pallor; marked double choking is now present. Attacks of severe cephalalgia have recently supervened. Spinal scrology shows the fluid under marked pressure, and there is a strongly positive Nonne and a cell count of two per cu. mm. There have been attacks of hiccough and spells of drowsiness and sleep. He is entirely conscious during the attacks of muscular spasm, the contractions of which are comparatively slow and of extended amplitude, starting in the foot and advancing by successive stages up the thigh, over the trunk to the arm and slightly to the side of the neck, subsiding below as they advance upward. The entire arm is lifted from the bed in a pump-handle movement. The fingers contract slowly, not in unison always, and with athetoid characteristics. The facial expression, which was vivacious, is becoming markedly dull and masklike. He weeps and perspires following the spasms, which have varied greatly in severity and duration, lasting from one to nine minutes. Following a very severe spasm the right arm was left entirely powerless. He began to show speech disturbance, a simple stammer at first, completely aphasic at present. The qualitative changes in the great toe sign nearly disappeared, but showed accentuation again of late.*

The exact pressure-producing mechanism which results in the occurrence of these somewhat rare cases of choked disc is not fully understood. It is probably brought about both by the condition of general interstitial edema and by blocking of intraventricular drainage from meningeal exudate, all together causing interference with general venous outflow. This would explain the reduction of choking which followed spinal puncture and drainage referred to above. It usually is marked enough evidently to produce some dimness of vision, or the rapidly appearing and disappearing optic neuritis spoken of by Bramwell. He does not refer to the occurrence of complete permanent optic atrophy nor has it been found recorded by other observers. In these two cases it has probably been brought about by pressure or extensive foci of inflammation in the thalamic region.

Space and time forbid the fuller presentation of symptom groups in a number of other unusual cases, which will be sketched therefore only in brief summaries.

One of these, Mr. V., aged 32, teacher, after some heavy lifting in March, 1920, began having powerful myoclonic spasms of the loins and abdominal parieties. He was seen

a month later in consultation with Dr. E. Johnson at Bemidji, when nothing but that single symptom was present. This, later subsiding, was replaced by diffuse mild spasm and tremors, then restlessness, delirium like that of alcoholism, with picking at the air and bed-clothes. He developed a septic throat April 10; facial erysipelas April 15; a small pneumonic patch on the 23rd; a sublingual abscess on May 2; attacks of hiccough on the 16th; and died on the 17th. Blood cultures were negative. Lymphocyte count varied from 8,800 to 32,000. Wassermann was negative. Reflexes normal. Temperature reached 106° on April 20, rose to 105° or over ten different times, and reached 106° five times, going to 106.8° at death. The pulse followed a much lower range, from 90 to 120. Autopsy showed the characteristic foci scattered through the basal ganglia and brain stem, and an abscess in the left kidney.

Two recent cases, both women slightly beyond the age of forty, began with mental depression, weeping, whining and restlessness.

In one, referred by Dr. Robert Williams, lethargy supervened in a few days, moderate variable elevation of temperature, stertor and Cheyne-Stokes respiration; while in the other, sent in by Dr. Johnson of Bemidji, sharp excitement with shouting developed. Both advanced rapidly to fatal termination, the temperature rising to 108.2° axillary in one and 109 rectal in the other, just before death.

This final remarkable elevation of temperature, noted in a large proportion of cases by the writer, appears to be its most characteristic manifestation. Two other rapidly fulminating cases were ushered in by great excitement, local muscular spasm, quickly followed by stupor, paralysis of the detrusors, inability to swallow, and death in a few days.

While several cases showed apoplectiform attacks during the progress, only one had an apparently apoplectic beginning.

Mrs. C., about 68 years old, returning from a long automobile ride, entered her home and fell unconscious to the floor. She was seen with Dr. McDougald at Le Sueur, in stupor, and possibly with slight relaxation of left face. Reflexes were all normal. Lethargy continued with occasional rousing; profuse perspiration was present; death supervened a few days later. Careful questioning revealed the fact that for a month preceding the acute picture, she had been profoundly drowsy, falling asleep wherever she was.

A most remarkable case was seen in consultation with Dr. Tupper on June 10, 1923, which began some five days earlier with sudden purging and vomiting and temperature of 104°. This followed eating of canned salmon and appeared like ptomain poisoning for a brief interval. Then delirium supervened and severe pain in both lower legs. Passive motion of the legs would rouse her from the effects of the opiates, sensitiveness being so marked. Extreme headaches had supervened and she was apparently completely blind when I first saw her. The next day there was deafness in both ears. The next day, when seen again, she was in a stupor and the conjunctivæ were markedly

*This case soon reached fatal termination, temperature mounting to 105 degrees just before death. This case and one other developed a dark limited pigmentation of the skin and he and one other presented marked conjunctival injection and edema.

injected and edematous, a striking symptom, noted in only one other case. Death occurred that evening.

Another very unusual congerie was presented in a woman of 30 years, Mrs. O., seen with Dr. George, June 3, 1921. She had had an attack of extreme vertigo in the fall of 1919. Another similar attack in August, 1920, which continued and increased. She would stagger and run into things on the street. No other symptom until the following winter, when she became delirious. She fell to the floor unconscious in May, remaining so for several hours. She presented double ptosis, slow and slurring speech. Later she became violent, attacking the nurse; retrograded gradually with fatal outcome.

Two cases had long continued myoclonic spasm as a residue, one a constant jerking of the great toe. This case went from observation in November, 1920, apparently recovered except for a general asthenic state and returned just two years later presenting a complete agitans picture with tremor and marked general flush. The other had a sort of prancing movement of the whole left leg.

In its course and duration epidemic encephalitis is as uncertain in its behavior as in its other characteristics. Cases have been known to reach a fatal termination in as brief a period as four days. Others have continued for weeks or months, and our present knowledge of the long vitality of the virus explains cases now recognized as continuing on for indefinite years, not even yet fully determined as to possible length of duration. Foster Kennedy cites such a case now under observation that began in November, 1918, with active symptoms still persisting. The writer has an ex-service man whose condition began with what was diagnosed as influenza in November, 1918, with improvement and exacerbation of symptoms continuing to the present. The Parkinsonian syndrome became marked about a year following the onset. At times he has been delirious, at times lethargic and suffering from headaches, and now shows the typical agitans picture, without tremor. It has all appearance of a fixed and stationary state. Some writers speak of a permanent residue remaining in some cases. It is, however, too early as yet to make positive statements as to permanent disabilities.

Some observers report cases occurring in previously well and vigorous people; others find that most of their cases have been in individuals in run-down condition. None speak of evidence of predisposition. The writer has been struck by the considerable percentage of cases in which there was definite neuropathic heredity.

Various observers give widely divergent figures on mortality rates,—from none to over 50 per cent. Of the total cases on which this paper is based, slightly more than 33 per cent were fatal. But as has been pointed out by other writers, undoubtedly many milder or abortive cases are never recognized, and only the most serious are seen by specialist and consultant, making it evident that the actual death rate is decidedly lower than most reported figures indicate; and yet the disease is a highly fatal one.

No definitely effective treatment is known. Many measures have been employed. The value of any of them is uncertain. Simple supportive effort is for the most part indicated. Radical proceedings, like the subcutaneous injection of cerebro-spinal fluid, repeated spinal drainage and the like, have been resorted to. Urotropin probably has some value. Sodium iodide by mouth or intravenously appears to have some therapeutic effect. Opo-therapy has advocates. Hypodermoclysis or proctoclysis may be beneficial. Free elimination is desirable. Attempts to develop a specific serum are still in the experimental stage.

CASE OF ACUTE INTESTINAL OBSTRUCTION CAUSED BY VOLVULUS IN HERNIAL

SAC

W. H. MACIE, M.D.

Duluth

Mr. Harry Johnson, aged 35, by occupation a carpenter, was admitted to the Morgan Park Hospital January 31, 1923, at 2:50 A. M., complaining of abdominal pain. He had a large tumor in the right lower quadrant of his abdomen which had been in this location as long as he could remember. Of late years it had greatly increased in size. He had had no serious trouble with this tumor until about 11:30 P. M., January 30th. While sitting in a chair eating an apple he was suddenly attacked with a severe pain in his abdomen. This pain was very severe and increased until 1:30 A. M., when Dr. Ryan was called. He was then removed from his home to the Morgan Park Hospital. I examined him at 3:00 A. M. On inspection of the abdomen, we found a large oval tumor in the right lower quadrant occupying the region lying between the iliac bone and mid-line of the

abdomen. The tumor was about 7 inches in its long diameter by 4 inches in its transverse diameter. Diagnosis of strangulated right oblique inguinal hernia was made.

Operation was performed under ether anesthesia. On opening the sac the contents were exposed. The hernial contents consisted of about 4 inches of the terminal ileum, the cecum and all of the ascending colon together with an undescended testicle. On further examination, we found that the whole mass had twisted upon the mesentery, causing a volvulus within the hernial sac. The volvulus was reduced, the testicle removed and the contents of the hernial sac returned to the abdominal cavity. The mesentery of the cecum and the colon was very long. The cecum and colon were very large with a diameter of about 3.5 inches. This case is unique owing to the fact that volvulus took place inside of the hernial sac and external to the internal ring and entirely outside of the abdominal cavity. The hernial sac was very large and adhered over its entire surface and extended across the abdomen almost to the median line. After dissecting it free

it was removed and the hernia repaired by suturing the outer border of the rectus muscle to Poupart's ligament. Then the inner portion of the aponeurosis was sutured to Poupart's ligament. The outer portion was overlapped and stitched along the inner portion of the aponeurosis, making a plication of the aponeurosis. This seemed to make a very firm abdominal wall and I believe we shall have no recurrence of this hernia. The patient made a splendid recovery and was discharged from the hospital at the end of two weeks. The most interesting feature of this case was the fact that the twist occurred entirely within the hernial sac and outside of the abdominal cavity. I have not looked up the literature of volvulus taking place inside of a hernial sac, but thought this condition was of rare occurrence and worth reporting and putting on record. I would be pleased if other surgeons, who may have had a similar case, would drop me a line or two describing their case or cases. This hernia was a congenital one and was predisposed by presence of an undescended testicle.

MORGAN PARK HOSPITAL.

THE FEDERAL MATERNITY ACT*

There is a lack of unanimity of opinion among the medical profession with respect to the federal maternity law, known as the Sheppard-Towner Act. The house of Delegates of the American Medical Association, at St. Louis, went on record as being directly and positively opposed to this act. Since that time, it appears that a number of special societies and groups of physicians whose members are members and Fellows of the American Medical Association have declared their approval of the maternity law. County medical societies and even state medical associations have endorsed programs of work adopted in various states, which have been outlined or entered on by those charged with the responsibility of carrying out the provisions of this law. Many arguments have been advanced by the opposition in the medical profession; as many have been presented in answer by those who support the movement to extend federal aid to the states in connection with maternity and infant welfare work. Every one is familiar with the arguments that have been presented, for and against. There is no just

basis for calling into question the sincerity of either side. A fundamental objection to the Sheppard-Towner Act is based upon a principle that is sound and broad and that needs no bolstering; the individual state should do for itself and its own what is needed that can properly be done by the state, with machinery provided from its own resources and without aid or interference from other agencies.

With it all, there is a challenge to the medical profession in the situation that has been created by the passage of the Sheppard-Towner Law and the discussion that has followed its enactment; and the answer is: Let the physicians of this country perfect themselves in their knowledge of all that is involved in the medical care of mothers and infants and extend their service to all who are in need of it. It is not believed that the American medical profession is less able than the medical profession of other nations to care properly for mothers and babies, but absolute and unquestioned superiority is what the American profession should strive for.

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EDITORIAL

The State Convention

On October 10 to 12 the State Medical Association will hold its fifty-fifth annual convention in St. Paul. An excellent program has been arranged and provisions by the local members have been made to make this meeting the best ever held by the state association. The Councilors and the House of Delegates have much work of an important nature to transact. Every effort should be made by these representatives to be in attendance promptly and to give serious thought to the work in hand before and during the meeting.

Medical politics, which is falling into innocuous desuetude in our association, but which seems to have a kick or two remaining within its economy, should be still further eliminated and no actions taken except those which augur for the best interests of the whole membership.

"MINNESOTA MEDICINE" has already taken a stand upon the matter of choosing a presiding officer

and wishes to protest once more against the absurd practice of electing a president from Minneapolis and St. Paul twice out of each three years, as has been the custom in the past.

Such a custom can not be justified upon any grounds whatever. A presiding officer should be chosen for his ability alone, that is, his willingness to carry out the duties of the office as shown by his loyalty to the association in the past combined, of course, with a sufficient native ability. It should not matter whether he lives in one of the large cities or in the smallest country town. The injustice of selecting only one-third of the presidents from outside is made still more apparent when we consider that the Twin Cities contribute much less than one-half of the state society membership.

The Editing and Publishing Committee of MINNESOTA MEDICINE has considered this subject with some thoroughness and finds its position well fortified by the sentiment of the society membership—not only throughout the state at large but in the Twin Cities as well. The sentiment in Minneapolis and St. Paul is that it is unfair to all concerned. We therefore trust that the House of Delegates will select its officers, especially the president, without regard to his place of residence and that the old custom may be abandoned.

R. E. F.

The Optometrists and the Elevation of Standards

In the present position of the optometrists in Minnesota, and their apparent efforts to build up their professional standards, we find and notice many of the steps followed some twenty years ago by the medical profession. Their attitude toward the medical profession deserves some analysis. It is quite apparent that their work is essentially the fitting of glasses. They have no desire to be classed with *opticians*—men who, in addition to the mechanical work of preparing and framing lenses, often advance into the position of commercial spectacle fitters and merchandisers. The optometrists, in a measure, frown upon the credentials of the opticians, who invade their field of glass fitting, and here we note the beginning of a spirit which aims to advance their own professional standing and secure recognition for their credentials.

The optometrist attests that his reason for the use of the term "Doctor" is perfectly correct because he has the degree of "Doctor of Optometry";

that Columbia and some three or four other colleges offer courses of four years' duration leading up to this degree, the entrance requirements for which are a four-year high school diploma, as it is for other departments. (They admit, however, that like other cults the course of four years may be considerably shortened by the use of summer courses.)

To all direct inquiries as to qualifications, the conscientious optometrist would, of course, disclaim any intention of being an *M.D.* Nevertheless, above all of this effort on his part to practice only on his merits, appears the very obvious fact that most of the public makes no distinction between him and the medical oculist, and he most certainly basks in the reflected distinction and standing of the medical profession as a whole. It may be quite safely predicted that, if conscientious students and practitioners of optometry hold faithfully to their promises and keep up both their entrance requirements and matriculation standards for licensure, soon the keenest men among them will see the great advantage of applying two or three further years of study, and entering the medical profession proper. This would leave those without such zeal and professional spirit to seek a shortcut to a good position and a livelihood by holding all the requirements *down* and thereby abandoning the *professional* for a *trade* spirit. No doubt this contest is on, at least to some degree, within the ranks of optometrists. It must be apparent to their good men that the broader knowledge of the human body is absolutely essential if they are to be more than skilled salesmen of glasses; certainly, if they are to rise above merchandising and be able to give their clients native instruction, education or direction—ideas good even for their souls as well as their bodies. They cannot attain this position of power without the very fullest knowledge that can be acquired at the particular period of their study.

Reasoning along this basis, the decisive opposition of the optometrists to our Basic Practice Act in the last legislature was ill-advised and illogical. It was the recoil of those fearful of their own position, yet firm in an appreciation of their own fitness. Among other assertions, they contended that they were willing to demand tests in basic sciences as "applied to the anatomy, physiology," etc., of the "head and neck!" They seemed to overlook entirely that there is nothing in the neck which begins to have the association with ocular disease

that the kidney has, or (even more illustrative of the point), that nothing in medicine may quite so vitally influence the eye as syphilis—a disease with the most protean and universal bodily manifestations.

Admittedly, good optometrists do not locate in thinly settled country sections; in no way do they claim that they serve the public any cheaper than regular medical oculists. Therefore, they cannot be justified on a basis of country service or lessened community cost—arguments so often heard in favor of graduating doctors of inferior grade and less training. The optometrists do not even openly proclaim that there are insufficient regular medical oculists to properly fit glasses. In fact, like most irregular medical practitioners, they congregate chiefly in thickly settled centers of population where it is agreed by everybody are found the greatest number of good oculists.

How, therefore, does the careful optometrist justify his cult aside from the obvious purpose of making a living? He does so chiefly in the good old-fashioned way of proclaiming the "inferiority of the other fellow": "his lack of understanding of muscle balance"; "the fact that many medical doctors fit glasses who have had only a few weeks of preparation to do so." They further offer the free presumption that their minds, being unfettered by other claims for attention, encompass more fully the particular principles of physics and optics involved in their work. They assert that their long line of satisfied customers proclaim their general usefulness and community need. In the undoubted fact that many of these men do conscientious and satisfactory work, we can foresee that they are with us to stay. Present European conditions confirm an old financial law, that a strong and a weak currency cannot exist simultaneously: the strong is hoarded, and goes out of circulation. Seven-year and four-year trained "doctors" cannot exist together indefinitely. Either a flux of the latter will destroy the initiative of the former, or the lesser trained must be brought up to an average consistent for both, and parity result.

A recent attendant at the A. M. A. convention in San Francisco returned with much to say about the furor among the California profession over the increasing number and power of the quacks and cults in that state. One of the teachers in Harvard Medical School when queried about the outcome is quoted as having said in effect that they have

taken an osteopath into the staff of one of their teaching hospitals. There they propose to give him a chance and see what he will be able to accomplish. We must remember in this connection that the qualified optometrists are by no means "quacks." It seems entirely logical that we should assist them where possible to a further realization and attainment of professional standards: discarding advertising and holding their members to the strictest ethical code. Then, as they improve, let no other group, without any standards, be allowed to take their place.

E. L. T.

MISCELLANEOUS

THE FARGO CHILD HEALTH DEMONSTRATION

WILLIAM J. FRENCH, M.D., Director

The Fargo Child Health Demonstration has for its object the making of an outstanding demonstration of methods, along the latest and most approved lines, for the care and betterment of children. These include among other things methods for the education and care of expectant mothers, work with new-borns and other infants up to two years of age, the supervision and care of children of pre-school age and a complete method of work with school children involving physical examinations, regular weighing and measuring and a comprehensive system of health education including nutrition, with home follow-up work by a nursing corps. The scheme of work is fundamentally educational.

The Demonstration, which is financed by the Commonwealth Fund of New York, and administered co-operatively by a Committee composed of representatives of the Fund and the American Child Health Association, is not attempting to do this work alone but is operating on a partnership basis with the city of Fargo. Already the city through a representative citizens committee has entered into this partnership to a very considerable extent by providing for a full time health officer, providing offices and office equipment for the Demonstration, and the paying of the salaries of three of the seven nurses through the Board of Education and the Red Cross. At the end of the Demonstration period of five years the city will assume entire financial and administrative responsibility.

Of equal importance is the co-operative relationship which exists between the medical profession of Fargo and the Demonstration, as expressed in an agreement entered into between them. The preamble to this agreement follows:

"The following is submitted to the Cass County Medical Society for its consideration and approval, to the end that there shall be a complete and harmonious understanding between the physicians of Fargo and the Fargo Child Health Demonstration and that these two organizations working in close co-operation may together and with the help of all other agencies do all that can be done for the

health and well-being of the children and the people of Fargo.

"The Demonstration comes, not as a competitor in the field of curative medicine, but as an agency advocating and teaching certain ideas in preventive medicine and with a willingness to demonstrate these ideas to you as physicians and to the public by furnishing or causing to be furnished to both certain forms of service.

"These services aim to teach prevention of disease and how to keep the well individual well and happy.

"The methods hereinafter proposed will, it is believed, thoroughly protect and conserve the interest of the private practitioner. In addition it is hoped that they will stimulate the growth of a new relationship between the physician and his patient whereby the former will expect to give and the latter to receive, and pay for, information and service which will aim to keep him and his children well."

The agreement then goes on to state:

"It is agreed between the Cass County Medical Society and the Fargo Child Health Demonstration that the Demonstration will take over the direction of the present Well Children's Clinic operated by the Red Cross Infant Welfare Society with the assistance of the Cass County Medical Society, and conduct same along the following lines:

"The Demonstration will establish a Health Center at which will be held one or more consultations each week for presumably well children. No child who is known to be ill will be accepted by the Consultation. Such ill children, if they present themselves, will be referred immediately to their family physician. In no case will any particular physician be recommended. It is suggested in this connection that a list of the members of the Cass County Medical Society be posted in the Commercial Club or in the Health Center, or in both, and anyone having no physician be referred to this list in order that they may make their own selection.

"As a certain number of indigents who have no physician will appear, it is suggested that for the present certain physicians volunteer to treat these cases in the event of their being found to have defects or illnesses.

"The question of what constitutes ability to pay for medical services depends upon local conditions to a certain extent. The Demonstration will take steps to determine what these conditions are and will submit its findings to the Medical Society for its information and approval. In the meantime the Demonstration through its nurses and in all available ways will attempt to determine the facts in each case before referring that case for free treatment or recommending reduced charges. The facts in each case will be laid before the physician interested.

"As the work of the Health Center is educational and not charitable, it is laid down as a principle that all who wish shall be entitled to take advantage of its benefits, irrespective of their financial standing.

"A history of each child brought to the consultation will be taken and the name of the family physician ascertained. The child will then be given a thorough physical examination, weighed and measured. A careful record of all findings will be kept. If the child is found to be ill or to have defects, he will be referred to the family physician, who will be notified either by telephone or in writing of the

conditions found. The parents of these cases will be urged to consult their physician in reference to their child's condition and to abide by his decision. It is agreed that general advice as to bathing, clothing, diet, water, fresh air, exercise, rest, etc., shall be given at the consultation. Feeding formulæ may be written for infants needing them. Copies of these formulæ will be sent to the family physician.

"It is agreed that well infants and children shall be entitled to return to the consultation for such future weighings and measurings and at such intervals as the physician in charge may deem necessary. This is a service offered not only to the public but to physicians as well, for it is planned to furnish each child with a card on which its weights will be recorded, and which can be exhibited to the family physician so that he may watch the child's progress. The Health Center will gladly send special reports of weights and measures direct to the family physician whenever requested.

"It is agreed that with the exception of writing formulæ the physician in charge of the consultation will never prescribe except in cases of the greatest emergency when the possible saving of a life may be at stake.

"It is agreed that cod liver oil, or cod liver oil emulsion, is a food and not a medicine, and may be prescribed at the consultation.

"It is agreed that the same principles shall govern the work of the nurses of the Demonstration in the field and in the schools, and the work of the school physician, except that in school work the parents shall be notified and advised of defects found and urged to have these conditions corrected. It shall not be deemed necessary, however, to notify the family physician of these conditions as a routine procedure.

"It is proposed to bring to Fargo a pediatricist who will devote his entire time to, and be in charge of, the medical work of the Demonstration. He will not engage in private practice in Fargo. He will conduct the consultation and be available for consultation work with the physicians of Fargo, should they care to make use of his services, either by sending cases to him at the Health Center or by calling him into consultation at the hospitals or in private homes. It is hoped the physicians of Fargo will make use of his services, not only for ill children but also for that large group of apparently well or near-well children whom physicians are sometimes call to see because the parents, realizing their children are not making satisfactory progress, and feeling they as parents are not doing quite all they should for them, and not knowing what else to do, seek professional advice. In these cases and in those where parents, while feeling that their children are perfectly well, yet desire to fortify themselves with professional advice relative to present or future care of the child, the trained pediatricist can be of inestimable service to the family physician. No charges will be made for his services, either to the family or the physician.

"It is agreed that the consultation likewise shall be free. No charge shall be made for any of the services rendered there.

"Expectant mothers may come to the Health Center for information and advice and in other ways may come to

the attention of the Demonstration or its nurses. For these the Center will stand ready to make or have made urine examinations and to take blood pressure readings if requested to do so by the physician in charge of each case. Other examinations will not be made. The Health Center will urge these cases immediately to get in touch with their physician, explain to them the importance of having proper examinations made, and, if desired, give them information relative to personal care and the hygiene of pregnancy. Important information about these cases can be obtained and when obtained will be communicated to the physician with the least possible delay. The Demonstration nurses are available for service to these patients and will see that physician's orders are carried out. They cannot be present at deliveries as a routine, but will make post-natal visits and will give post-natal care.

"It is hoped that through the city the Demonstration will be furnished with the names of all new-born children. At least one visit will be made to these infants as soon as possible after birth and such subsequent visits as the family or the physician may desire."

Not to be outdone the dentists of Fargo volunteered to examine the teeth of all the children in the kindergartens, first and second grades of the public and parochial schools. These examinations were made a few weeks ago. The dentists will care for, without charge, all indigents needing dental attention.

Space does not permit going into a detailed résumé of the many things that have been done or are in the process of being accomplished. Those responsible for the Demonstration believe that with such whole hearted co-operation on the part of the professional and civic groups the success of the Demonstration is assured.

OBITUARY

DR. WILLIAM HENRY MITCHELL

Following an illness of six weeks, Dr. William Henry Mitchell, a practicing physician in Minneapolis for forty-five years, died at the age of 73 years at his summer home in Mound, Minn., August 18, 1923.

Dr. Mitchell came to Minneapolis in 1868 and practiced there continuously until 1914, when he retired from active practice and moved to his home at Mound.

Dr. Mitchell is survived by his widow and two sisters, Mrs. S. B. Stoddard, of Rock Island, Ill., and Mrs. Ella Hepbourn, Moline, Ill. —

DR. PALMER HORACE IRISH

Dr. P. H. Irish died at his home in Akeley Friday, August 24, 1923, at the age of 46 years.

Dr. Irish was born March 9, 1877, near Essex, Vermont. He came to Minnesota at the age of eighteen and took up his medical studies at the University of Minnesota, from which he was graduated in 1900. In August of the same year he began the practice of medicine at Akeley, where he continued his medical work until the time of his death.

Besides his wife and son, Palmer Horace, Jr., Dr. Irish is survived by two brothers and two sisters.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION

The annual meeting of the Minnesota State Medical Association will take place Wednesday, Thursday and Friday, October 10, 11 and 12, 1923, at Saint Paul, with headquarters at the Saint Paul Hotel. The meetings of the Council and the House of Delegates on the first day of the convention will be held at the Saint Paul Hotel.

The scientific meetings will be held Thursday and Friday, October 11 and 12, at the Masonic Temple, Sixth and Smith streets.

The Ramsey County committees in charge of the coming meeting are: General Chairman of Committees—Dr. Frederick L. Neher.

Committee on Exhibits—Dr. F. M. Whitmore, chairman; Dr. W. R. Shannon, Dr. J. N. Dunn.

Committee on Banquet and General Entertainment—Dr. Edgar H. Norris, chairman; Dr. W. C. Gardner, Dr. R. L. Kennedy.

Committee on Hotel Accommodations—Dr. J. L. Martineau, chairman; Dr. W. C. Rutherford, Dr. L. A. Hilger.

Committee on Entertainment of Ladies—Dr. A. Gruenhagen, chairman; Dr. L. W. Barry, Dr. C. C. Bell.

Committee on Lantern Slides—Dr. W. R. McCarthy, chairman; Dr. V. P. Hauser, Dr. H. E. Richardson.

Committee on Telephone Service—Dr. A. Pederson, chairman; Dr. G. N. Ruhberg, Dr. J. M. Sprafka.

Committee on Meeting Places—Dr. L. S. Ylvisaker, chairman; Dr. F. E. Foley, Dr. H. E. Hullsiek.

Sign Committee—Dr. W. D. Brodie, chairman; Dr. A. E. Mark, Dr. E. K. Geer.

Golf Committee—Dr. E. M. Jones, chairman; Dr. H. E. Hunt, Dr. F. L. Beckley.

Those desiring hotel accommodations in advance may communicate with Dr. J. L. Martineau, 225 Shubert Bldg., Saint Paul, chairman of the Committee on Hotel Accommodations. Arrangements may also be made direct with the hotels. For the convenience of outside visitors the following list is given:

St. Paul Hotel, 5th and St. Peter.....\$3.50 and up
Ryan Hotel, 5th and Robert.....\$2.00 and up
St. Francis Hotel, 7th and Wabasha.....\$2.00 and up
Boardman Hotel, 9th and Wabasha.....\$1.50 and up

A special meeting of the Women's Auxiliary of the Minnesota State Medical Association will be held in the Saint Paul Hotel, at 10 A. M., Thursday, October 11. The meeting will include a report by the delegates to the National Auxiliary, a report of the year's work and election of officers. This meeting will be open to any doctor's wife interested in organization affairs and the wife of each member of the Association is cordially invited to attend.

A luncheon for visiting ladies will be given at the Women's City Club, 4th and Cedar, at one o'clock, Thursday, October 11. All visiting ladies are urged to register with the members of the Association at the Saint Paul

Hotel upon arrival to facilitate the matter of making proper arrangements for the number to attend the luncheon.

The Johns Hopkins Alumni Association will hold its annual luncheon on the second day of the convention, Thursday, October 11, at 12:30 o'clock in the St. Paul Hotel.

The luncheon of the Minnesota Alumni Association will be held Friday, October 12, at 12 o'clock at the St. Paul Athletic Club, 4th and Cedar.

NOTICE OF AMENDMENT

Notice is hereby given of an amendment to Article IX, Section 3, of the constitution of the Minnesota State Medical Association submitted to the House of Delegates at its meeting Saturday, October 14, 1922, in Minneapolis.

The section mentioned reads as follows:

"The officers of this Association shall be elected by the House of Delegates on the morning of the last day of the Annual Session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councillor, and no person shall be elected to any such office who is not in attendance upon that Annual Session, and who has not been a member of the Association for the past two years."

It is proposed to change the section to read as follows:

"The officers of this Association shall be elected by the House of Delegates at a meeting to be held the second day of the Annual Session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councillor, and no person shall be elected to any such office who is not in attendance upon that Annual Session, and who has not been a member of the Association for the past two years."

TRI-STATE DISTRICT MEDICAL ASSOCIATION ANNUAL MEETING

DES MOINES, IOWA, OCTOBER 29 TO NOVEMBER 1, 1923,
INCLUSIVE

Minnesota is now a part of the Tri-State District Medical Association and on an equal footing with Iowa, Illinois and Wisconsin. At the meeting this year there are to be a vice president and three trustees elected from Minnesota.

In the September number of MINNESOTA MEDICINE a preliminary program of this meeting was published and only the desire to avoid duplication prevents us from publishing a final program of the meeting.

Headquarters will be at the Fort Des Moines Hotel and all sessions will be held in the new Woman's City Club building of Des Moines. The four days will be filled with post-graduate medical work beginning with diagnostic clinics at 7 A. M. each day, the evenings being taken up by addresses. A banquet is scheduled for the evening of the fourth day, November first.

Those who attended last year's meeting at Peoria know what valuable work this vigorous sectional society is doing and the enormous amount of clinical and didactic work that is crowded into the short period of four days.

CENTRAL MINNESOTA DISTRICT MEDICAL SOCIETY

The annual picnic meeting of the Central Minnesota Medical Association was held Thursday afternoon, August 23, at the Teepetonka Hotel, Green Lake, Spicer.

The afternoon program included the following papers:

Acute Ear Conditions, Dr. P. C. Davison, Willmar.

Differentiation Between Medical and Surgical Gastric or Duodenal Ulcer, illustrated with lantern slides, Dr. Archibald MacLaren, St. Paul.

Insulin and High Fat Feeding in Diabetes in Children, Dr. N. O. Pearce, Minneapolis.

Traumatic Rupture of the Kidney and Its Diagnosis, Dr. B. J. Branton, Willmar.

During the program the visiting ladies were entertained. At six-thirty the banquet was held in the hotel dining room.

Dr. J. C. Jacobs, of Willmar, is president of the association and Dr. C. L. Scofield, of Benson, is secretary.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION

The Mississippi Valley Medical Association will hold its forty-eighth annual session at Hot Springs, Arkansas, October 9, 10 and 11, 1923.

A program of outstanding merit and appeal has been arranged including Symposia on Cardio-vascular Renal Diseases and Diseases of the Upper Abdomen.

A special attraction will be a tour of the Reservation with its wonderful natural phenomena and the session at the famous Government clinic.

Headquarters will be at the Eastman Hotel. Dr. Charles Travis Drennen, of Hot Springs, is chairman of the Committee on Arrangements.

UPPER MISSISSIPPI MEDICAL SOCIETY

The annual meeting of the Upper Mississippi Medical Society was held in International Falls, Monday, August 20.

During the forenoon guests enjoyed a trip through the local paper mill and were entertained at luncheon at the cottage of Dr. Mary Ghostley at Birch Point.

The afternoon session was devoted to the scientific program, which included addresses by Dr. T. R. Martin, Duluth; Dr. M. A. Shillington, St. Paul; Dr. E. W. Johnson, Bemidji, and Dr. E. Klaveness, of Minneapolis.

MINNEAPOLIS SURGICAL SOCIETY

The Minneapolis Surgical Society will put on the first monthly Clinic Day, Thursday, October 4, 1923.

The program, tentatively arranged, is as follows:

8:00 A. M. to 12:00 noon—Operative Clinics at the General Hospital, by Drs. Wilcox, Corbett, Zierold, Olson, Lynch, Maxeiner and Robitshek.

2:00 P. M. to 4:00 P. M.—The Clinical Pathological Society will put on a program at the University Hospital.

6:30 P. M.—Luncheon at the General Hospital followed by presentation of clinical cases, and a paper by Dr. R. C. Webb, "Drainage in Appendiceal Cases." The discussion on this paper will be opened by Dr. Archibald MacLaren, of St. Paul.

Visiting physicians are cordially invited to attend the entire program.

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

The annual meeting of the Southwestern Minnesota Medical Society will be held Thursday, November 8, 1923, at the Worthington Sanatorium.

The program will include papers by Dr. S. A. Slater, Worthington; Dr. H. J. Leigh, Lakefield; Dr. F. W. Metcalf, Fulda; and Dr. R. S. Riser, Minneapolis. Election of officers for the ensuing year will also take place at this meeting.

OF GENERAL INTEREST

Dr. A. Elliott Vik, formerly of Big Lake, has moved his practice to Winthrop.

Dr. A. J. Scholl, of Rochester, has returned from a two weeks' trip to New York and Baltimore.

Dr. and Mrs. Harold Habein, of Minneapolis, are the parents of a son, born Saturday, August 18th.

Dr. and Mrs. M. J. Hanson, of New London, have returned from a trip through northern Minnesota.

Dr. Jakob Iivoslef, formerly of Minneapolis, is now located at International Falls for the practice of medicine.

Dr. E. L. Bradley, formerly of the Mayo Clinic, Rochester, is now associated in practice with Dr. E. I. Lindgren at Duluth.

Dr. M. B. Murray, formerly of Maywood, Illinois, has accepted a position on the staff of the More hospital at Eveleth.

Dr. and Mrs. Waltman Walters, of Rochester, are receiving congratulations on the arrival of a daughter, born August 27th.

Dr. L. A. Steffens, of Red Wing, has returned from a two weeks' stay in Chicago, where he was engaged in post-graduate work.

Dr. R. M. Wilder and Dr. H. E. Robertson, of Rochester, have returned from a month's canoe trip in the woods north of Rainy Lake.

Dr. Carl Hartley Greene, of Rochester, returned September 12 from California, where he spent a month in the Yosemite Valley.

Word has been received of the death of Mrs. W. H. Arndt, wife of Dr. W. H. Arndt, of Frazee, which occurred August 27.

Dr. Clarence E. Wilson, formerly of Dakota, has purchased the practice of Dr. Kierland at Harmony, where he has established his offices.

Dr. and Mrs. Charles Bolsta and daughter, Mildred, of Ortonville, recently returned from a trip through the lake region of northern Minnesota.

Dr. D. P. Maitland, after an absence of a year spent in Florida and in attendance at clinics in Minneapolis and Rochester, has returned to his practice at Jackson.

Miss Florence Mae Lampert, of Madison, Wisconsin, and Dr. H. L. Parker, of the Mayo Clinic, Rochester, were married in Madison, August 4.

Dr. S. M. Johnson, who has been a member of the medical staff at the Shaw hospital, Buhl, for the past eight years, has resigned his position and is now located in St. Paul.

Dr. Baldwin Borreson, of Bemidji, has disposed of his practice there and is now located at Remer, where he plans to establish a small hospital in connection with his office.

Dr. E. S. Judd, Dr. M. S. Henderson, Dr. D. M. Berkman and Dr. D. F. Hallenbeck, of Rochester, and their families have returned from a three weeks' stay at Grand Marais.

Dr. Donald H. Edwards, who has been engaged in United States health work at Louisville, Kentucky, for the last few years, has recently accepted appointment as school physician at Hibbing.

The marriage of Miss Mary McGonagle, of Duluth, and Dr. Mark Hopkins Tibbetts, of the Duluth Academy of Clinical Medicine, was solemnized at the home of the bride's parents, August 15.

Dr. J. W. Doyle and Dr. G. E. Mulvihill, of Minneapolis, have opened the Chicago Avenue Clinic at Twenty-ninth Street and Chicago Avenue, and will specialize in the treatment of skin disease.

Dr. E. C. Mason, who had been on the staff of the Mayo Clinic since July 1, 1921, took up his duties as Director of the Clinical Laboratories at the Ford Hospital, Detroit, Michigan, September 1.

Dr. Laura Mary Moench, formerly of the Mayo Foundation and Clinic, left Rochester, August 28, for Northampton, Mass., where she has accepted a position as Instructor in Hygiene at Smith College.

The marriage of Miss Lucille Murphy, of Fargo, N. D., to Dr. W. J. Dowswell, of Benson, took place Saturday, September 1, at the home of the bride's parents. Dr. and Mrs. Dowswell are now at home in Benson.

Dr. and Mrs. George T. Baskett, of St. Peter, recently returned from a three weeks' trip through Yellowstone National Park. They were the guests of Dr. Baskett's brother at Big Timber, Montana, while en route.

Dr. Katherine Pardee, formerly of the Mayo Foundation and Clinic, has accepted a position as resident physician at the Minnesota State Teachers' College at Moorhead. Dr. Pardee left Rochester August 30.

Dr. C. J. Hutchinson, who has completed his fellowship under the Mayo Foundation, left early in September and will take a cruise on the Great Lakes with the United States Naval Reserve before going into practice.

Announcement has been received of the marriage of Miss Doris Hooper, daughter of Mr. and Mrs. William Hooper, Republic, Mich., to Dr. S. E. Urberg, of Duluth, Friday, August 16. Dr. and Mrs. Urberg are now at home at 1611 East Fourth street, Duluth.

Dr. C. A. Rathbun, physician at Sauk Rapids for the past five years, has become associated in practice with Dr. H. W. Goehrs, of St. Cloud. For the present Dr. Rathbun will retain an office at Sauk Rapids in addition to his work with Dr. Goehrs.

Dr. F. M. Babcock and Dr. I. F. Selly, of Northfield, and Dr. P. A. Smith, of Faribault, were recently appointed as members of the United States Board of Examining Surgeons, Bureau of Pensions, for Rice County. The headquarters of the board will be in Northfield.

Dr. Orville N. Meland, of Warren, sailed September 11 from New York for Europe, where he will spend six months

or more in visiting hospitals and clinics in London, Gothenburg, Vienna and Paris and in pursuance of his studies in surgery. Before returning home, Dr. Meland expects to make a brief tour of the Scandinavian countries, Germany, France and other portions of the continent.

As a result of poor health, Dr. C. J. Woolway, superintendent of the Deerwood Sanatorium, Deerwood, has definitely resigned his position, which he has held for the past three years. He will be succeeded by Mrs. Woolway as superintendent with Dr. C. B. Bernard, formerly medical director of the Sand Beach Sanatorium and more recently of a tuberculosis hospital in St. Louis, Mo., in charge of the medical work.

Dr. Adolph Lorenz, of Austria, has just completed a two weeks' stay at the Perryburg Hospital, Buffalo, New York, where he came September 18 to attend patients desiring his services. Fifteen thousand applications had been made the first part of September for operations and the announcement was made at that time that Dr. Lorenz would attend 100 persons a day. A wing of the hospital was set aside for persons unable to afford hospital expenses.

Dr. Robert Emmett Farr presented a lecture before the meeting of the American Association of Obstetrics, Gynecology and Abdominal Surgery, which was held at Philadelphia, Sept. 19 to 21. He was the guest of honor at a special meeting of surgeons at Providence, R. I., on Sept. 22. Dr. Farr also presented a series of lectures before the Academy of Medicine in Syracuse, N. Y., at a meeting of surgeons in New York City and before the Second Councilor District of the Ohio State Medical Association, at Dayton, Ohio.

Resident and travel scholarships amounting to \$10,000.00 have been offered by the American Child Health Association, 370 Seventh Ave., New York City, to be effective during the school year, 1923-1924, and during the summer of 1924. The principal requirements are that physicians who want to improve their qualifications for child health work, take courses in institutions giving approved courses—demonstrations and places doing some outstanding piece of child health work. These scholarships are being offered in order to meet the growing demand for more and better trained physicians in the field of child health and are open to anyone who wishes to apply for them through the New York office of the Association.

The Central School of Nursing of the University of Minnesota will enter during the ensuing year only two classes; the one for the fall quarter commencing September 26, 1923; the other for the spring quarter commencing April 2, 1924.

It is important that applications be made at as early a date as possible prior to either entering quarter. A high school diploma is a prerequisite for admission.

The school commands the nursing services, for educational purposes, of four associated hospitals, the University Hospital, the Charles T. Miller Hospital, the Minneapolis General Hospital, and the Northern Pacific Hospital.

All students are entered under University registration. Applications are submitted to the Director, Miss Louise M. Powell, School of Nursing, University of Minnesota.

NEW AND NON-OFFICIAL REMEDIES

In addition to the articles enumerated in September, the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

LEDERLE ANTITOXIN LABORATORIES:

Thromboplastin-Lederle.

NATIONAL ANILINE & CHEMICAL CO.:

Enteric Coated Tablets Neutral Acriflavine—"National."
Ointment Neutral Acriflavine—"National" 1 per cent.

E. R. SQUIBB & SONS:

Solution of Hypophysis-Squibb.
Arsphenamine-Squibb, 1 gm.
Arsphenamine-Squibb, 1.2 gm.

WINTHROP CHEMICAL CO.:

Luminal Tablets $\frac{1}{2}$ gr. (Winthrop Chemical Co.)

NEW AND NON-OFFICIAL REMEDIES

Protein Mixtures for Diagnosis.—Mixtures of two or more pollen, epidermal or food protein preparations. These mixtures are supplied in order that the number of skin tests to determine sensitiveness to proteins may be reduced. If sensitiveness to a given protein mixture is found, then tests are made with the individual proteins contained in the mixture. (See Pollen and Epidermal Extracts and Biologically Reactive Food Proteins, New and Non-official Remedies, 1923, p. 234.)

Group Allergens Diagnostic-Squibb.—A mixture of two or more allergens-Squibb in equal proportions. These protein mixtures are used to determine sensitiveness to proteins (see preceding article, Protein Mixtures for Diagnosis). Group Allergens-Squibb are marketed in vials containing 0.025 gm. The following Group Allergens-Squibb have been accepted: Type I, Beet, Carrot, Parsnip, Radish, Turnip; Type II, Cabbage, Celery, Lettuce, Onion, Spinach; Type III, Artichoke, Asparagus, Cauliflower, Rhubarb, String Bean; Type IV, Cucumber, Egg Plant, Pumpkin, Squash, Tomato; Type VI, Apricot, Cherry, Peach, Plum, Prune; Type VII, Cantaloupe, Grape Fruit, Lemon, Orange, Watermelon; Type VIII, Apple, Banana, Pear, Pineapple, Fig; Type IX, Almond, Chestnut, Filbert, Hazelnut, Peanut; Type X, Black Walnut, Brazil Nut, English Walnut, Hickory Nut, Pecan; Type XI, Barley, Buckwheat, Corn, Oat, Rice; Type XII, Beef, Goat, Horse, Pork, Mutton; Type XIV, Chicken, Duck, Goose, Guinea-hen, Turkey; Type XV, Bluefish, Codfish, Haddock, Halibut, Mackerel; Type XVI, Butterfish, Salmon, Sea Bass, Sole, Whiting; Type XVII, Clam, Oyster, Crab, Lobster, Scallops, Shrimp; Type XVIII, Black Pepper, Ginger, Mustard, Paprika, Vanilla; Type XIX, Cocoa, Coffee, Tea; Type XX, Egg (all proteins), Cow's Milk (all proteins), Goat's Milk (all proteins); Type XXI, Cat (hair), Cow (hair), Dog (hair), Horse (dander), Rabbit (hair); Type XXII, Chicken, Duck, Goose; Type XXVI, Micrococcus Catarrhalis, Pneumococcus 1, Pneumococcus 2, Pneumococcus 3, Pneumococcus 4; Type XXVII, Staphylococcus Aureus, Staphylococcus Albus, Staphylococcus Cit-

reus, Streptococcus Pyogenes, Streptococcus Viridans. E. R. Squibb & Sons, New York.

Pollen Antigens-Lederle.—In addition to the products listed in New and Non-official Remedies, 1923, p. 239, the following have been accepted: Annual Salt Bush; Bermuda Grass; Cocklebur; Johnson Grass; Mountain Cedar; Mugwort; Oak; Orchard Grass; Perennial Rye Grass; Rabbit Bush; Redroot Pigweed; Russian Thistle; Spiny Amaranth; Yellow Dock. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., Aug. 4, 1923, p. 393.)

Protein Extracts Diagnostic-P., D. & Co.—Protein extracts in the form of paste, the base of which is a mixture of glycerin and powdered boric acid. One part represents one part of original material. For a discussion of the actions, uses and dosage, see Pollen and Epidermal Preparations and Biologically Reactive Food Proteins, New and Non-official Remedies, 1923, p. 234. Protein Extracts Diagnostic-P., D. & Co. are marketed in collapsible tubes containing sufficient material for fifty tests.

Group Protein Extracts Diagnostic-P., D. & Co.—A mixture in equal proportions of two or more Protein Extracts Diagnostic-P., D. & Co. For a discussion of the actions, uses and dosage, see preceding article, Protein Mixtures for Diagnosis. Group Protein Extracts Diagnostic-P., D. & Co. are marketed in collapsible tubes containing sufficient material for fifty tests.

Elixir of Luminal.—Each 4 c.c. (one fluidrachm) contains 0.015 gm. ($\frac{1}{4}$ gr.) of luminal in a menstruum containing alcohol 20 per cent. For a discussion of the actions, uses and dosage of luminal, see New and Non-official Remedies, 1923, p. 63. Winthrop Chemical Co., New York.

Scarlet Red Medicinal—"National."—A brand of Scarlet R. Medicinal Biebrich-N. N. R. For a discussion of the actions, uses and dosage of Scarlet R. Medicinal Biebrich, see New and Non-official Remedies, 1923, p. 275. National Aniline & Chemical Co., New York. (Jour. A. M. A., Aug. 18, 1923, p. 548.)

PROPAGANDA FOR REFORM

Collosol Calcium.—E. E. Prest (Brit. Med. J., Jan. 14, 1922) recommended a new "Collosol" brand of so-called colloidal calcium for the treatment of tuberculosis. T. C. Graves (Lancet, Nov. 4, 1922) discussed "Colloidal Calcium in Malnutrition, Chronic Sepsis and Emotional Disturbances." The publications of Prest and Graves serve as uncritical endorsements of another addition to the Collosol preparations. The conclusions reached by Graves concerning the beneficial action in the treatment of "Emotional Disturbances" do not seem justified by the character of the evidence he presents. Such results as he reports are common experiences without the use of medication. There is no basis, either in theory or in the evidence presented, for administering a calcium salt in colloidal form; if advisable, soluble compounds of calcium such as the lactate and chlorid may be administered hypodermically. Thanks to the timely report of the Council on Pharmacy and Chemistry, the Collosol preparations are not being pushed in the United States though they are being actively exploited in England. (Jour. A. M. A., Aug. 4, 1923, p. 409.)

Two More Electronic Diagnoses.—A physician reports that one of his patients became alarmed by a diagnosis of generalized carcinoma made by an osteopath who is a disciple of Albert Abrams. In order to test the diagnostic ability of this disciple of Abrams the physician had the patient send the Abrams disciple a specimen of blood (which was taken from a young rooster who had been confined to his coop since birth) for diagnosis. The diagnosis which was received showed syphilis, gonorrhea, generalized carcinoma, sarcoma of the spine, chronic malaria and diabetes. Another physician reports a diagnosis made by an Abrams follower on a man who is working and by no means ready to die. The diagnosis showed "diminished resistance" (an Abrams euphemism for syphilis), "carcinoma of gall bladder," "streptococcus," "sarcoma of both kidneys, right worse," "tuberculosis both lungs, upper right and middle left," "sarcoma," "gallstones," "malaria" and "pneumonia." (Jour. A. M. A., Aug. 11, 1923, p. 493.)

Bacillus Acidophilus Therapy.—A method for the preparation of *Bacillus acidophilus* milk has been published by Rettger and Cheplin (Arch. Int. Med., Vol. 29, 357, March 1922). Microscopically, *Bacillus acidophilus* closely resembles the *Bacillus bulgaricus*, but cultural methods of distinction have been proposed. The therapeutic value of the various lactic acid ferment preparations is discussed in New and Non-official Remedies, 1923. While recent publications give evidence in favor of *Bacillus acidophilus* therapy, W. H. Morriss expresses the belief that whatever beneficial results occurred in the cases reported by him were due to some other factor than the actual transformation of the common intestinal bacteria into the *acidophilus* type of organism. (Jour. A. M. A., Aug. 11, 1923, p. 494.)

Tapeworm Remedies.—Oleoresin of aspidium and pelltierin tannate are the remedies of choice, the first being more popular. To give the remedies the best chance for action, the intestinal contents should be reduced as much as possible by restriction of solid food and evacuation before the treatment. On the morning of the treatment the patient should stay in bed and be given from 6 to 8 gm. of oleoresin of aspidium divided into as many capsules in the course of 10 to 15 minutes. Two hours later a saline cathartic should be administered and repeated every two hours until thorough evacuation has been secured. (Jour. A. M. A., Aug. 11, 1923, p. 495.)

The Chlorin Antiseptics.—The essential attributes of Surgical Solution of Chlorinated Soda-N. N. R. is a definite but mild alkalinity, hypertonicity and presence of the correct amount of sodium hypochlorite. Because hypochlorite solutions are unstable and their active component is not available in solid form, chloramin-T, dichloramin-T and halazone were evolved. The first two have been received as worth-while additions to our materia medica. Because the three products contain their chlorin in its less stable modification, the composition and purity of these products have been watched by the A. M. A. Chemical Laboratory. Recently, P. N. Leech of this laboratory reported on the quality of the market supply of American-made chloramin-T, dichloramin-T and halazone, which are described in New and Non-official Remedies. Out of eight specimens of chloramin-T, one was considerably substandard, two were

slightly substandard and five were satisfactory. The chloramin-T tablets, chloramin-T pastes and an aromatic powder were satisfactory. Two out of four specimens of a surgical powder were markedly decomposed. All the specimens of Council-accepted dichloramin-T complied with the standards. Re-examination of specimens of the chloramin examined five years previously showed that chloramin-T and halazone are quite stable, but the dichloramin-T specimens had decomposed somewhat. Leech believes that both the hypochlorite preparations and the chloramins are active oxidizing agents because of the positively charged chlorin atom which they contain, and that their antiseptic action depends on this. He determined that the oxidizing power of chloramin-T is much greater in neutral than in even slightly alkaline solutions. From this it is apparent that one strength of a solution of pure chloramin-T may be active as a germicide while a solution of the same strength containing sodium bicarbonate may be ineffective. (Jour. A. M. A., Aug. 18, 1923, p. 581.)

Administration of Iodid for Goiter.—For the prophylaxis of goiter, Marine and Kimball employed 2 gm. of sodium iodid given in 0.2 gm. doses daily for ten consecutive school days. This was repeated twice yearly. Marine and Kimball state that this amount of iodid is excessive and that 1 gm. of sodium iodid distributed over a longer period would be better. Sodium iodid may be prescribed in solution, a dose to a teaspoonful. If the patient be furnished with a small quantity of potassium iodid—say 1 gm.—and advised to mix it thoroughly with 1 kg. of ordinary table salt for occasional seasoning of his food at the table, he will get all the iodid that is necessary for prophylactic purposes and in an entirely unobjectionable manner. (Jour. A. M. A., Aug. 18, 1923, p. 598.)

Bismuth Preparations in Syphilis.—The Council has issued a statement of the present status of bismuth preparations in the treatment of syphilis. In this report the history of the use of bismuth salts in the treatment of syphilis is reviewed, the evidence for the value of bismuth salts as compared with mercury preparations and arsphenamine is considered and the dosage and danger of untoward effects are discussed. The statement of the Council concludes with the following summary:

1. Bismuth preparations have a sufficient experimental basis both for their favorable effects and limitations. The advantage consists in their distinct action on experimental syphilis. The limitations are clear, if one considers the disproportion between the large dose, which is necessary to sterilize an animal, and the small dose, which can be tolerated by man. The available information appears to show that bismuth preparations will not cure syphilis, when used alone.

2. Bismuth treatment is not usually injurious if the necessary precautions (observations for beginning stomatitis, examination of urine, etc.) are observed. Intravenous injection is to be strictly avoided. The therapeutic effect of bismuth is rated by the majority of authors between arsphenamine and mercury. Bismuth compounds may be valuable in cases in which the patients are intolerant to the other drugs used in the treatment of syphilis or resistant to them, as shown by a persistent positive Wassermann reaction. (Jour. A. M. A., Aug. 25, 1923, p. 661.)

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

GENERAL MEDICINE. VOL. I. THE PRACTICAL MEDICINE SERIES. Edited by George H. Weaver, M.D., Lawrason Brown, M.D., Robert B. Preble, A.M., M.D., Bertram W. Sippy, M.D., Ralph C. Brown, B.S., M.D. Series 1923. Chicago: The Year Book Publishers.

A CLINICAL GUIDE TO BEDSIDE EXAMINATION. Dr. H. Elias, Dozent and Assistant at First Medical Clinic of University of Vienna, Austria; Dr. N. Jagic, Extraordinary Professor and Chief Physician to the Sofienspital, Vienna, Austria; Dr. A. Luger, Dozent and Assistant at Second Medical Clinic of University of Vienna, Austria. Arranged and translated by William A. A. Brams, M.D., Chicago, Adjunct in Medicine, Michael Reese Hospital, formerly Lieutenant Commander, Medical Corps, United States Navy. 135 pages. New York: Rebman Company, 1923. Cloth, \$1.50.

CHEMISTRY FOR NURSES. Fredus N. Peters, A.M., Ph.D., Director of Laboratories and Professor of Chemistry and Metallurgy, Kansas City Dental College; Instructor in Chemistry in Kansas City High School for 23 years; more recently, vice principal. 2nd edition. 302 pages. Illustrated. St. Louis: C. V. Mosby Company, 1923. Cloth, \$2.50.

PRINCIPLES OF BACTERIOLOGY. Arthur A. Eisenberg, A.B., M.D., Director of Laboratories, St. John's Hospital; Pathologist to Lakewood Hospital; Serologist to St. Ann's Hospital, Cleveland, Ohio; Director of Laboratories, Mercy Hospital, Canton, Ohio. Member Society of American Bacteriologists. 2nd edition. 214 pages. St. Louis: C. V. Mosby Company, 1923. Cloth, \$2.25.

OBSTETRICS FOR NURSES. Charles B. Reed, M.D., Obstetrician to Wesley Memorial Hospital, Chicago. 2nd edition. 399 pages. 144 illustrations including 2 color plates. St. Louis: C. V. Mosby Company, 1923. Cloth, \$3.50.

NURSERY GUIDE, for Mothers and Nurses. By Louis W. Sauer, M.A., M.D. Price \$1.75. 188 pages, 12 illustrations. St. Louis, Mo. C. V. Mosby Company. 1923.

This little book is written for mothers and nurses and gives in a clear, concise form the essentials in the care and feeding of infants.

The opening chapter deals with prenatal care and general instructions to the mother during pregnancy and lactation, giving advice on the care of the new-born, as to the nursery, clothing, bowels, bath and sleep.

The last part of the chapter explains the physical development of the infant; height, weight and eruption of teeth of the normal infant, with a general consideration of the causes which delay or retard these processes.

The second chapter is devoted to the nursing infant; giving instruction on the care of the nipples and breast, and a clear explanation of nursing technic, such as establishing and maintaining a proper milk supply, nursing routine and nutritional disturbances of the breast-fed infant.

The premature infant with instructions in maintaining uniform warmth, food and general care is next considered.

The artificial feeding of infants is then taken up. All the different infant foods are described with complete details as to their preparation and indications for their use. A set of rules are formulated for the guidance of mothers in detecting and avoiding gross errors, with an outline of the diet for a child in the second year. Calories are explained along with a table giving one hundred caloric portions.

Nutritional disturbances of the artificially fed child are next described, such as vomiting, diarrhea, weight disturbance, dyspepsia, rickets, tetany and scurvy.

In the last two chapters the common ailments of infancy and the care of the sick infant are described.

Instructions in first aid and modern therapeutic measures as related to infants are given in conclusion.

This nursery guide can be highly recommended to mothers and nurses. The subject matter is treated in such a simple, clear manner that any mother can readily understand it, yet so modern and systematic as to be an ideal text-book for nurses.

A. STEWART, M.D.

OPENING FOR PHYSICIAN at Hitterdal, Minn. Located in Red River Valley, excellent farming country, well settled; town about 300 population. Have drug store and registered pharmacist. Further particulars from Secretary, Commercial Club.

WANTED—A physician acquainted with either the Scandinavian or German languages to locate in excellent farming community. Nothing to sell. Address B66, care of MINNESOTA MEDICINE.

FOR SALE—Ten bed hospital, brick building, well equipped, with office and residence in same building.

Sixty miles northwest of Minneapolis. Very low price. Address B67, care of MINNESOTA MEDICINE.

WANTED—A physician at New Market, Minnesota. Practice includes territory within a radius of 10 to 15 miles. Population, 300, mostly German. Good schools. Residence of nine rooms ready for occupancy. For further particulars, address Martin Poepl, New Market, Minn.

FOR SALE—Practice and part of equipment. Town 600. Good opportunity for right man. No competition. Must be cash—no triflers. Reason for selling—specializing. Address B68, care of MINNESOTA MEDICINE.

MINNESOTA MEDICINE

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Northern Minnesota Medical Association and Minneapolis Surgical Society*

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ORIGINAL ARTICLES

THE FUNCTIONS OF THE STATE MEDICAL ASSOCIATION*

E. STARR JUDD, M.D.

Rochester, Minnesota

The objects of this association are to federate and to bring into one compact organization the entire medical profession of the state, and to unite with similar organizations in other states in the formation of the American Medical Association.

The compactness of our state association has been evident since its beginning, owing largely to the fact that most of its members are graduates of the Medical Department of the State University and are members of the same alumni association. There has been no tendency toward the formation of cliques within the association, and it is very important that no such subdivisions shall be made. I believe that this policy will obtain so long as we have but one medical school, and so long as we are able to keep the standards of the profession above medical politics.

The nucleus of all medical organizations is the county medical society. A group of physicians of good moral and ethical standing in the county may organize a county society, and this society may become one of the units of the state association and be entitled to one delegate in the House of Delegates. If the county has but few medical men, then two or more counties may join in organizing a society; thus every man in the state has an opportunity to become a member of a county society, and it is his duty to take advantage of this oppor-

tunity. Joint or district societies have no direct contact with the state association, nevertheless I believe that they are an important part in the organization of the profession in the state, since they result in interesting and enthusiastic meetings for those who may not have an opportunity to attend other similar meetings. At least two of these societies in our state have, for a number of years, been a stimulus to their members, and have been important factors in the progress and development of medicine in the state. District societies do not and should not have a separate representation in the state organization, as each county in the society has its delegate in the House of Delegates of the State Association. When the membership of the county society is small and composed of physicians whose practice keeps them at home most of the time, it is sometimes so difficult to maintain interest in the meetings that they are dropped. This is unfortunate, since often a little more effort will tide over a difficult situation and place the society on a firmer basis than before. Medical meetings are for the purpose of interchanging ideas, discussing medical problems and getting the medical community together socially. The membership need not necessarily be large to be of real service, yet it should be large enough to promote free discussion of the scientific problems presented, and also to encourage the development of a social program. Some of the county medical societies have a clinical meeting once a month to take the place of the regular meeting. Such meetings are held in the hospital, and certain cases of interest in the hospital or in the community at the time are presented and the points of interest discussed. It is now generally recognized that, in order to maintain interest in medical meetings, particularly in the county and district meetings, there must be a clinical side to the program. A discussion of clinical topics stimulates the men to make more careful examinations, and to keep better records, so that their contributions to medical meetings may grow in importance.

*President's address before the Minnesota State Medical Association, St. Paul, October, 1923.

Eighty-one of the eighty-six counties in Minnesota have organized county medical societies. The five counties that have no medical organizations are not in the rural districts, but close to the larger cities, and many of the physicians attend meetings in the adjoining county, so that it can be said that practically every county in the state has an organized county medical society or offers opportunities for its physicians to attend medical meetings. August 1, 1923, 1,854 of the 2,774 physicians in the state were members of the State Association. The numbers, naturally, fluctuate from day to day because of deaths, changes of location, and the entrance of recent graduates. The number of physicians in the state is increasing considerably each year.

COÖPERATION WITH THE AMERICAN MEDICAL ASSOCIATION

The contact of the State Association with the American Medical Association comes through two delegates who are elected each year. Dr. J. W. Bell and Dr. J. L. Rothrock, who have been our delegates to the national meetings for many years, have rendered important service in aiding to meet the problems that have arisen, and to work for proper legislation. The State Association is also to be congratulated in having had Dr. McDavitt, a member of long standing and a former secretary, on the Board of Trustees of the American Medical Association for so many years. Our society is justly proud of the work he has done. It may be difficult for the members of the House of Delegates of the State Association to keep in touch with the problems of the American Medical Association, and yet I believe it should be the policy of the Minnesota Medical Association to instruct its delegates to bring up matters of importance before the national organization. It is only through our delegates that we may come in contact with the national organization, and be given an opportunity to institute, or at least to influence, medical legislation.

EXTENSION OF MEDICAL KNOWLEDGE; ADVANCEMENT OF MEDICAL SCIENCE

According to the constitution of our association, it is our duty to impart medical knowledge to the public, to advance medical science, and to elevate the standard of medical education. Every physician who so desires may keep abreast of the times through medical journals, society meetings, clinics,

and demonstrations. The extension of medical knowledge to the public is probably best accomplished by means of the associated press. We are prohibited by our code of ethics and the principles of honesty from advertising in the newspapers, but we should make more use of the medium of newspapers for distributing important facts with regard to medicine and public health. Under the supervision of committees or associations of medical men, this is now being done without violating our code of ethics. Those who are responsible for the policies of the newspapers are, of course, anxious to publish truthful news with regard to medical facts which are of interest and importance to the public, and many newspaper organizations are now having such news items reviewed, and corrected if necessary, by a committee of competent men before they are published. A great deal of this work is being done at the headquarters of the American Medical Association, and credit should be given to the officers of the Association for instituting this important propaganda for the extension of medical knowledge. The publication of journals by medical associations for distribution to the general public is a new part of the plan. The American Medical Association publishes and distributes each month 30,000 copies of such a journal. A similar journal, which is justly receiving favorable comment, is being published by one of our state societies. Possibly it is too soon to estimate the value of these publications, but even in this short time the outlook is promising and undoubtedly will become more so with wider distribution.

One of the vital reasons why the medical profession should strive to impart information to the public with regard to public health matters is to offset the influence of the charlatan who advertises in the newspapers as the physician cannot. It is not alone the uneducated and unintelligent class who need this information. Some of our most highly educated and presumably most intelligent citizens often become victims of the charlatan. The machinations and the patent medicines used by various cults for the cure of ailments and complaints are all made very alluring, and demonstrate the reason why these cults have such a large following. No doubt many of these patients are treated in perfect sincerity and the fact that chronic ailments have disappeared as though by magic has been as convincing to the healer as to the patient.

So long as human nature is human nature, and so long as hysteria and neurasthenia prevail in association with human ailments, just so long will all varieties of symptoms continue to be apparently cured by magic. The medical profession can accomplish little by condemning and ridiculing such methods; their strength must lie in the patient and persistent explanation of plain facts with regard to disease, which have in the past, unfortunately, been surrounded by mystery. While it would be unbecoming for members of the legitimate medical profession to become agitated over the activities of the charlatan, nevertheless his influence on medical practice should not be ignored. We should, as I have said, endeavor to present our information clearly and from a practical standpoint to the lay public, at the same time endeavoring to attain greater perfection in the practice of our profession. We must face the fact that the charlatan has attained his present position partly as a result of our failures and neglect of the everyday humanities, which may mean more to the patient than the achievement of a brilliant result medically, and partly because, although we have graduated from reputable medical schools, are thoroughly competent to make complete examinations, and to interpret the findings, we do not always take time to do it, and thereby overlook an easily recognized ailment.

Since the beginning of the history of medicine in this country we have asked, "What will become of the medical profession as the result of the activities of quacks?" We have regretted the loss of esteem for the profession and have bemoaned the fact that physicians in the rural districts were moving to the cities. In an interesting address before the Tennessee State Medical Association this year, Dr. Olin West, Secretary of the American Medical Association, dealt particularly with these problems. He said that, after making a detailed study of the minutes of the first meetings of the American Medical Association, he was convinced that few of the problems, real or fanciful, which agitate us or arouse our fears, are at all new. He quoted from the address of the first President of the Association (1848) as follows: "The profession to which we belong, once venerated on account of its antiquity, its various and profound science, its elegant literature, its polite accomplishments, its virtues, has become corrupt and degenerate, to the forfeiture of

its social position, and with it, of the homage it formerly received spontaneously and universally." Seventy-five years ago, at a meeting of the American Medical Association, in Baltimore, the fact that physicians were leaving the rural districts for the larger cities was discussed at great length. At this same meeting a committee reported, "Quacks and irregular practitioners swarm like locusts in every part of the country."

It is comforting to know that our problems are at least no worse than when the profession was first organized in this country; in fact, that, in spite of the pessimistic attitude taken by some of the leading members of the profession at that time, we seem to have progressed somewhat toward the solution of the problem, and our progress has been more rapid in recent years. I am inclined to take the cheerful view that the medical profession is greatly respected by the lay public and that our efforts to advance in knowledge and attainments, to the end that we shall be better able to care for their ailments, are appreciated.

So far as I have been able to learn, our rural districts are, in general, well cared for. However, I believe conditions could be improved by the establishment of more community hospitals. Such hospitals naturally attract more able men since they are thus enabled to do better work. As has been emphasized, it is difficult for a physician practicing in a large rural center, without the use of a hospital, to maintain enthusiasm for improving his work, or to hold his interest in modern medical problems. These physicians, having begun the practice of medicine with the highest ideals, must strive constantly not to reduce their work to the mere effort of making a living. The medical profession should make an earnest effort to be of service to these men by establishing hospitals in their communities. Furthermore, they should be encouraged to attend medical meetings and to take part in them, and our state association should make it as convenient as possible for them to attend clinics and to hold meetings in their own towns. While much progress has been made along these lines, yet there should be still further stimulus to encourage physicians to continue to study and to undertake practical problems of research. The routine practice of medicine, under certain circumstances, may become most uninteresting. Although it is not ordinarily practical for the general practitioner to

carry out experiments which necessitate operating on animals, he may study special groups of cases in which he is particularly interested. The more time one devotes to a subject, the more one finds to learn, and the satisfaction of learning is correspondingly great. It is a matter of interest and pride that insulin, probably the most important discovery of many generations, was discovered by a young teacher and general practitioner. The actual results of most experimental research are probably not of great value, but the performance of these experiments requires independent thinking, which makes bigger men. It is probable that the most important investigative work will be carried on by practitioners who have had wide experience in the problems involved in the human side of the practice of medicine.

To return to the subject of charlatanism, it is satisfactory to note that the cults have not increased in the last seventy-five years. President Wilbur believes that when every student receives some training in biology, the patent medicine cheat, the rubber and the manipulator, and the knotted string faddist, will have less fertile soil for their mushroom activities. Everyone who has made a serious study of the problem seems to agree that it is a matter of education of the general public along the lines of medicine and public health, and that it is the duty of the profession, through the activities of its societies, to carry out such educational propaganda. Several plans were presented and discussed at a conference of state secretaries this year. In Michigan it was decided to establish a committee on public education, originated by the Michigan State Medical Association. The committee embraces in its membership representatives from the State Medical Association, the University of Michigan, including the Extension Department, its medical and hospital staffs, the State Department of Health, the State Dental Association, and the Detroit College of Medicine. Speakers are sent on request to any place in Michigan. The Extension Department of the University helps to pay the expense of these speakers. The committee has apparently just begun its work and it may be some time before the results of its activities are realized, but thus far the members are very enthusiastic over what has been accomplished, both from the standpoint of publicity and the elevation of medical standards.

The second plan, which was discussed at the conference of the secretaries, is in operation in Colorado and California, under the name of the Public Health League. In Colorado this body acts as an intermediary between the State Medical Association and the public. The League is composed of lawyers, merchants, ministers, and physicians, the laymen being in the majority, and they are gradually becoming the most enthusiastic supporters of the movement. The League has functioned most satisfactorily for about one year.

The third plan was put in operation in Iowa, largely due to the activities of Dr. Macrae. There is a field activity committee, consisting of the President of the State Association, two members selected by the council, one from the State Board of Health, one from the Faculty of Medicine of the University, one from the Iowa State Tuberculosis Association and one a state social worker. Thus there are seven men on the committee, five of whom are members of the State Medical Association. The problems undertaken are (1) the distribution and delivery of medical service, (2) the adequate provision of good hospitals, (3) the establishment of county public hospitals, and (4) the solution of health problems in schools. The Director of the Field Activities Committee devotes his whole time to the work. He has visited societies and clubs throughout the state, and up to the present time it is reported that he has discovered many matters of importance that need to be corrected. The expense of carrying on such work is great, and the activities of the committee have been limited by insufficient funds.

A fourth plan, an organization in Idaho, is operated by the League for the Conservation of the Public Health of Idaho. The secretary writes: "The League is somewhat different from the Medical Society in that it is larger in scope and handles problems that could not be touched by a medical society. In other words, the League takes care of the publicity, political and legislative end of the game, while the Society handles the scientific and ethical side." He feels that the League has an advantage over a medical society since it may take part in all public health questions, and since the membership includes everyone interested in the betterment of public health, whereas the membership of a medical society is limited to medical men. As an illustration of the League's function, he cites

the passage of the licensing law, concerning which there has been a misconception on the part of the public to the detriment of the medical profession. "Any public health law, and this includes the licensing law, is passed in the interest of the whole people; this has been held in hundreds of supreme court decisions. As a matter of fact, a law put through to benefit a certain profession or a class would be unconstitutional, and the supreme courts have held that all public health laws, while they have been fostered by medical men, are placed on the statute books for the benefit of the people. It is, therefore, one of our aims to interest the people in matters of this kind." There have been over 900 court decisions pertaining to licensing matters handed down by our various supreme courts. A misconception has arisen that the profession is doing this for their own benefit. The secretary of this league believes that their great work in the future will be to start health columns in the daily, weekly, and monthly papers, in order to give the public the benefit of the knowledge acquired by the medical profession. Under conditions of such complete frankness there will naturally be a better understanding between the public and the profession. Active membership in the Idaho League is limited to medical men, and the secretary feels that the control of the League should be kept in their hands. The regular members pay a definite membership fee, while the associate members pay any sum they desire.

In an endeavor actively to relate public health to the welfare of the state, Governor Smith of New York invited representatives of the medical profession from every section of New York to act as an advisory committee to the governor, this committee to investigate and report on rural health conditions and facilities, medical education, medical research, the Medical Practice Act, and narcotic drug problems. The action of Governor Smith in bringing into existence such a committee was endorsed by the House of Delegates of the American Medical Association.

We all recognize the necessity of a closer relationship between the public and our profession, and a consideration of the foregoing plans would seem to indicate that more can be accomplished by organization than by endeavoring to demonstrate to state legislators the importance of what we are trying to do in the interests of public health. While

these various projects for the purpose of obtaining better contact between the state medical association and its component societies, between the state association and the national organization, and between all of these organizations and the public, have not been in existence long enough to justify a definite prognosis with regard to results, they nevertheless suffice to encourage further effort along these lines, not only by a few of the medical profession, but by all.

In view of the work being done in other states, it seems to me we should lose no time in appointing a committee from among the members of the Minnesota State Medical Association to study the plans of the various organizations now in existence, and later to formulate such an organization as may seem best suited to corresponding work in our own state.

STANDARDS OF MEDICAL EDUCATION

One of the accomplishments of which the State Association may be justly proud is the elevation of the standards of medical education. The requirements for entrance to the Medical School of the University of Minnesota are as high as in any medical school in the country, and as a result of the plan formulated by the State Board of Regents for medical training for graduates, we now have one of the best schools in the country. Because of the fact that the state has but one medical school, we are in a closer medical and social relationship, which is so essential and valuable in preventing petty differences.

Willbur says, "The success of modern men in medicine must rest on these factors of safety given by Allbet as the guides of the wise Greek physicians of more than 2,000 years ago. The first is freedom from magic, the second is mastery of hygiene, and the third is that, in spite of abstract notions, never to forget to treat the individual."

Methods of treating human ailments have changed and will continue to do so, but our aims have not; they still revolve around the individual relationship of physician to patient. All of these various functions have been made a part of our constitution, so that in following and developing them we may become capable and honorable, as well as more useful to the public in the prevention and cure of disease, in the palliation of incurable diseases, and in the prolongation of human life.

THE TREATMENT OF TUBERCULOSIS*

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Tuberculosis in man is a disease more or less localized in certain organs but with a strong tendency to become generalized. On account of this apparent predilection for one organ or another it is usually spoken of as glandular, pulmonary, intestinal, abdominal, surgical and so forth, and the probability or even possibility that it may be much more widely distributed than the symptoms indicate is overlooked.

For half a century pulmonary cases have been classified as in the first, second or third stage by the extent of the lung involvement, without regard to the fact that ulcerative intestinal tuberculosis carries off half or more of the fatal cases of so-called pulmonary tuberculosis. The extension of the tuberculosis to the intestinal tract and other abdominal organs is often unsuspected until revealed as the real cause of death on the post-mortem table. In fact the death certificate of many of these cases should read, intestinal tuberculosis complicated with old pulmonary tuberculosis. This is rendered all the more possible because ulcerative intestinal tuberculosis may give neither signs nor symptoms of its presence.

This digression from the subject of the paper has been made to illuminate the statement that tuberculosis should be regarded as a general disease, and that its treatment should not be undertaken until the presence of tuberculosis has been excluded from one organ after another and the final diagnosis locates its distribution with accuracy.

No case should be accepted as a case of surgical tuberculosis, for example, without a complete physical examination including stereo-plates of the chest and fluoroscope study, with plates of the intestinal tract, aided by the barium meal and the opaque enema. Early diagnosis has long been heralded as the prime requisite to successful treatment. Let us amplify this by saying that both an early and an accurate diagnosis is the first essential to success.

The past forty years have witnessed the most in-

tensive work upon the subject of tuberculosis that the profession has ever given to this most interesting and important disease. We believe that certain fundamentals have been so universally accepted, as the result of this work, that they should be regarded as the permanent foundation of our treatment.

This foundation has been gradually developed from different methods of treatment, but no useful system has been suggested, unless certain cornerstones have been used in conjunction with it; and they are rest, fresh air, food, and discipline.

Conscientiously and intelligently used, under constant skilled supervision, these simple methods are usually sufficient in uncomplicated cases to carry the patient over the danger line if supplemented with such adjuvants as the physician may deem necessary to meet any threatened emergency.

The most prominent additions to the universal foundations referred to above are chemo-therapy, tuberculin, heliotherapy (including the different lamps), pneumothorax, and surgery.

Rest has been a recognized therapeutic agent for generations. Weir Mitchell understood its importance in chronic diseases, and worked out the method of its use in neurasthenia and allied conditions in the seventies.

Rest must be both physical and mental; and, as Allen K. Krause says, should include the "relief from strain" that is embraced in the idea of absolute rest.

The patient must be so instructed that he will never allow himself to get tired, but will accept the first hint of the approach of fatigue as the signal of danger, and immediately take refuge in rest.

Rest of the body as well as of the mind is essential, even when the tuberculosis is localized, and when rest of certain parts is indicated. When a single joint or the spine or a pleuritic side is clamoring for a splint, give it the necessary supports, but at the same time immobilize the entire patient. Put the larynx to rest by interdicting the use of the voice, but do not nullify the local gain by allowing the patient to be up and about.

Absolute rest in bed is the most reliable remedy against the daily rise of temperature, for the racking cough and weakening sweats, loss of appetite and disordered digestion, as well as the annoying neuralgias of the intercostal nerves and those of the

*Presidential Address to the Minnesota Academy of Medicine, September 19, 1923.

abdominal parietes of the sufferers from tuberculosis.

The full therapeutic results from rest are not obtained unless the remedy is used continuously and intelligently until the ends sought for are realized. As the prognosis in pulmonary tuberculosis is the most uncertain and difficult chapter, so is the length of time the rest treatment must be carried out impossible to determine in advance. While one patient whose disease runs on smoothly to a satisfactory termination may be allowed to leave his bed in three or four months and begin the last division of the treatment—namely, exercise—another, who may have been admitted under the same classification, but who has developed various complications, will be found in bed after the lapse of eighteen months or two years, and yet may eventually be discharged as an arrested case. The successful use of rest implies its administration in liberal doses over a long period of time, without any intermissions. The essential elements in the success of the rest treatment are that the physician be firm, and the patient be determined to recover. No lapses from it may be indulged in without the danger of a relapse with more or less serious consequences to the patient.

The co-operation of the patient is a *sine qua non*. Recovery from tuberculosis shows that the patient is full of grit and determination, that present desires and comforts have been disregarded for future rewards. The fact is that recovery from tuberculosis is equivalent to a certificate of a strong character. The successful struggle for health prolonged through months and even years presupposes an unusually close co-operation between physician and patient. The patient must be convinced that the physician is pointing out the right road and there must be no doubts or misgivings on the patient's part if the road is to be followed to its termination. The patient must be willing to submerge his own theories and must whole-heartedly accept those of the physician, and this through a long vista of days and weeks and months extending oftentimes into years. How evident it is that the physician must know how to get the patient's confidence and how to keep it, and also that often as much credit for the ultimate victory belongs to the one who points the way as to the one who has had to endure the mental and physical stress and hardship.

Just here a few words on the subject of the

length of time that should be given to the successful treatment of a case of tuberculosis. Given a case of tuberculosis of a joint and every surgeon at once says that three years will be necessary to effect a cure. But how few are willing to acknowledge that as much time should be given to a case of pulmonary tuberculosis, a much more dangerous and widespread pathological condition than the tuberculosis of a single joint.

The subject of rest cannot be closed without speaking of exercise.

When a patient has been strictly confined to bed for a long time it is not a simple maneuver to get him up and on exercise without bringing on a relapse.

When the pulse and temperature have been running along within normal limits for some time the first exercise is embodied in the bathroom privileges, so highly prized by patients. If this does not cause an increased amount of sputum, and acceleration of the pulse, or a daily rise in temperature, the further privilege of a single meal a day in the dining room is added. If everything continues to improve, a second and third meal is allowed at intervals of a week or two. Then the patient is given a walk out of doors of five minutes' duration once a day. Immediately after this walk pulse and temperature are recorded. Half an hour's rest on the bed follows, when pulse and temperature are again recorded. Both pulse and temperature are increased by even slight exertion, but if they have subsided at the end of thirty minutes then walks should be continued, and the amount of exercise very gradually increased. At the end of a week a five-minute walk may be added in the afternoon. Each week five minutes are added to the morning and afternoon walks.

This gradually increased exercise goes on unless the amount of sputum increases, fistulæ reopen and discharge pus, the pulse beats faster, the temperature mounts above normal, or the patient feels fatigued. Then the patient goes back to bed and to absolute rest and again begins gradually to exercise after the disquieting symptoms have disappeared.

When the patient is able to take a two hours' walk in the morning and two hours in the afternoon he should be discharged. But this discipline has taught him many things. He has learned that the way of the invalid back to health is hard. He appreciates his health, and does not take it for granted, as he did before he lost it.

Unfortunately the great majority of the patients soon imagine that they have learned how to live; that they know how to take care of themselves; that all these rules are not necessary in their particular case, and so they go forth to reap a harvest of relapses and all too soon to occupy a consumptive's grave.

Fresh pure air, free of dust, smoke and all gaseous impurities is a very important element, especially for the relief of cough. The mantle of heavy smoke and fog seen over large industrial centers often contains most irritating sulphurous fumes, considerable quantities of soot, and other products from the imperfect combustion of fuel and from chemical factories.

In addition to this there is not an inconsiderable quantity of carbon monoxide from the engines of automobiles and trucks. When we consider that every automobile produces from one to two cubic feet of carbon monoxide gas per minute, sufficient in a small closed garage to asphyxiate a man in five minutes, it does seem highly probable that in districts where the traffic is heavy, some deleterious effect must be produced upon people living on congested thoroughfares. The headache of carbon monoxide poisoning is an oxygen deficiency symptom, demonstrating the action of the gas. The noises inseparable from large concentrated populations increase nervous tension and strain, and disturb sleep.

The patient in his home or in a hospital in town is subject to the intrusion of too many relatives and friends. Their visits often break into the prescribed rest hours, they seldom are convinced that their talk and even their very presence is putting the patient under a strain, and the unfortunate patient is seldom allowed to have them sent away without seeing them.

From such considerations as these it is very evident that it is highly desirable to remove these patients from crowded centers of population into the relatively pure air of the country with its quiet nights.

A patient removed from the usually ill ventilated bedroom of home and put in bed with pure country air constantly changing around him throughout the twenty-four hours, soon notices a feeling of renewed well-being. The cough and amount of expectoration diminishes, night sweats disappear, fever is lessened, and appetite begins to reassert itself.

The chemists have not been able to determine the particular ingredient of the air of overcrowded apartments that makes heads ache and brains cerebrata slowly and with difficulty, and yet there is undoubtedly something that does these things and that does make a cough much more troublesome than it would be in the open air. Take the example of the open air school. Children in an open air school whose day is not more than two-fifths as long as the ordinary school day, accomplish as much in a year as their fellows who have put in the full time daily in the crowded schools. And this, in several schools with which the writer is familiar, without doing any work out of school, and in spite of the fact that these schools are only open to subnormal children.

Such considerations as these certainly outweigh the fact that investigation has not been able to define the difference between the air of a closed or only partially ventilated apartment, and that of the freely moving air out of doors.

Anyone who has for years seen the marvelous change wrought in patients by a simple rest cure in the open, cannot but have a most abiding faith in the potent qualities for good, inherent in the pure fresh air of the great open spaces.

Little need be said about food, except to state the present attitude toward the overfeeding of the past. Five or six meals a day were the rule. The patient was encouraged to swallow as many as a dozen raw eggs in milk in the twenty-four hours. In one institution trays were set before patients every four hours and the attendants were not allowed to remove them until every particle of the weighed out portions were swallowed. Emesis followed so often that the basin accompanied the meal as regularly as the stewards on passenger ships produce them when the ocean is even moderately rough.

Derangements of the digestive organs and functional albuminuria have shown the errors of this system, and now patients are given three meals a day of an easily digestible and attractive character, and eggs and milk, while still much used, are not hedged about with myths of any specific medical property such as they were formerly credited with, especially in the anti-tuberculosis propaganda of twenty-five years ago. Lunches between meals are ordered if indicated, but are the exception, not the rule.

Discipline is the mortar which binds these various bricks together. The patient must be made to understand that however trivial the regulation may appear, success can only be obtained by absolute obedience to every rule in the system. Here the character of the patient shows itself. If willing to be convinced and to forego the pleasure of improving upon the instructions given, or in other words to accept the authority of the physician and to be guided by it, then the cure is made easier for both parties, and no costly relapses are induced by the apparent determination of the patient to get well his own way, or not at all, a state of affairs only too often met with.

In a sanatorium, discipline is more important than a drug room, and if successfully enforced makes the drug room almost superfluous. Discipline is enforced with difficulty even in a sanatorium. In treating patients in their own homes it is usually very good whenever the physician happens to be in the house, seldom during his absence.

The sanatorium should be a school in which all of its inmates learn proper methods of living both to guard their own well-being and to protect others from infection in case they return to their homes and resume their previous occupations as open cases or tuberculosis carriers.

This knowledge cannot possibly be imparted to a patient in a residence at the sanatorium of a month or so. It must be so thoroughly acquired that the new ways of living, the changed attitude toward so many problems, have been grafted deeply into their very beings and have been dignified by being admitted to those deeply rooted habits which govern our individual relations to the world. If the discipline of the sanatorium is to successfully form new habits in its inmates, time is the most important element, and when patients are in condition to be discharged, or such of them as are fortunate enough to make a relative recovery, these habits will have become an integral part of each individual. If looked at in this way there can be no argument as to whether the sanatorium should be a school for the tuberculous, or a place in which they are to seek for a cure, as both of these objects are usually attained together. Just a smattering of the hygienic requirements of the case are worse than useless, and unless these lessons in proper living are thoroughly assimilated, the results are often ridiculous in the extreme and the teachings of the false prophets who have been to this or that sana-

torium for a month or two, and who imagine that they know it all, would astonish their teachers beyond measure by their positive statements often exactly opposed to the principles sought to be instilled.

After this tedious statement of the obvious and commonplace in the management of this most chronic of diseases, let us turn to themes of a more argumentative character.

The chemo-therapy of tuberculosis is a subject as old as the history of the disease and to date wholly unsatisfactory.

It is so from the nature of the defences with which the bacillus of tuberculosis is surrounded, in contradiction to the parasites, trypanosomes and spirochetes, which circulate freely in the blood stream and are not protected by a fatty and waxy envelope and which can be effectually killed therapeutically without injury to the host. It is most astonishing how many ways have been suggested, within the memory of the writer, of overcoming the bacillus of tuberculosis within his citadel, and how their very names have been forgotten after a short period of enthusiastic experimentation.

The bacillus, it was declared, could not survive a temperature that the host could readily endure; therefore let us sterilize the lungs by breathing in heated air. Here is a gas that kills the bacillus in a test tube. Let us fill the large intestine with this gas and thus sterilize the patient. Here is creosote. The bacillus of tuberculosis can not grow with a very minute quantity of it in the test tube. Turn the patient into a test tube, fill him up with creosote until every secretion and excretion of his body reeks with the poison. Here comes Shurley and Gibbs with solutions of iodine in one bottle and gold in another. Injected bravely and in sufficient quantity the bacillus must surrender. And so on *ad infinitum*.

Of more recent years a tremendous amount of work has been done by research workers in the hope of finding some specific for tuberculosis. For example the great volume of research on this subject that has been issued from the laboratory of the Sprague Memorial Institute of Chicago.

Chaulmoogra oil and its derivatives has scored such a triumph in leprosy that workers in tuberculosis have naturally turned to it in the hope that it might solve the tuberculosis problem as it has that of leprosy. No positive results have yet been re-

ported. The staff of Pokegama Sanatorium are using it both on animals and in a few carefully selected cases. As in leprosy the injection of the chaulmoogra esters are well borne by patients and some of those thus treated have done remarkably well. Its topical use in laryngitis has often controlled pain but has not had any curative action on the local tuberculosis. A detailed report of this work will be made in due time.

Tuberculin has had many ups and downs in its checkered career, and to this day the discussion of the best preparation and how to use it monopolizes about half of the space in the German special tuberculosis publications.

The writer has used tuberculin for thirty years, and is convinced that it is exceedingly useful in assisting fibrosis and maintaining a high degree of immunity for many years, if used after all acute symptoms have been controlled. Given to children with positive von Pirquet reaction, this result is especially marked.

In latter years very few sanatorium patients have been given tuberculin because the rest treatment alone, given as it can only be in a sanatorium, seems able to accomplish as much as could be expected from the added use of tuberculin.

This statement may soon have to be retracted and tuberculin once more reinstated at the top of the list of remedial agents if the reported success of a new antigen suggested by Professor Dreyer, Pathologist of the University of Oxford, England, be found upon investigation to be all that the first reports claim. His method differs from the innumerable ones that have been used previously in that he first robs his bacilli of their fatty and waxy coat of mail. The bacilli are treated in formaldehyde and then the lipoids are extracted with acetone in a Soxhlet apparatus. The antigen is then made in the usual way from the bacillary bodies minus their protective coats.

Let us hope that Professor Dreyer has succeeded in giving us a specific vaccine whose use will be followed by as great a measure of success as has attended the use of vaccines in so many diseases. The reports of its successful results in the treatment of infected guinea-pigs, and from a London hospital of its use on some sixty patients, are most encouraging.

Heliotherapy was used by the ancients and during the past century has been gradually reinstated

in favor. It remained for Rollier to demonstrate its great value in the cure of surgical tuberculosis in his sanatorium established in 1903 at Leysin, Switzerland, at an altitude of 4,000 feet.

Rollier shows in his recent book on heliotherapy that it is a local treatment which is at the same time analgesic, bactericidal and a powerful stimulus to cicatrization; that it aids and consolidates the cure; that it does away with mutilating operations; and that exposure to cold air raises and maintains high metabolic activity.

At the present time heliotherapy is being used with great advantage in the low lands as well as in the mountains. This has been rendered possible by the use of the quartz lamp, especially in localities that are not blessed with as much sunshine as is usually found in high altitudes. By using the lamp in very cold weather and on cloudy days the treatment becomes possible everywhere, and crippled children can be given its advantages near their homes wherever they may be located.

The sun and the lamp have proved to be a wonderful combination, and while not able to accomplish as much as Aladdin and his lamp, yet they are truly invaluable in the treatment of tuberculosis. All bone and joint tuberculosis, sinuses and fistulæ, glandular, pleuritic, and last but not least, even abdominal and ulcerative intestinal tuberculosis yield to their magic power, if that power is applied in the beginnings of these conditions. Even magic is powerless in extremis.

Rollier says pulmonary tuberculosis is no contra-indication to heliotherapy even in cases with a tendency to hemoptysis, but the treatment must be applied in a careful and circumspect manner.

Dr. Pryor and La Grasso at Perrysburg have shown that the supposed danger of heliotherapy in surgical cases complicated with pulmonary tuberculosis is a myth. At Pokegama no harm has ever been done to carefully selected pulmonary cases by sun exposures, but very often marked benefit has resulted. Patients who have much fever with toxemia, in other words far advanced cases with a bad prognosis, must never be given sun and air baths.

Allen K. Krause says, in speaking of pneumothorax, that it is the one outstanding advance in the treatment of tuberculosis since the discovery of the bacillus in 1882.

An artificial pneumothorax splints the lung and

thus holds it at rest. While physiologically active the lung cannot know rest. Like Saint Nicholas' little round belly, which "shook when he laughed like a bowl full of jelly," the lung is a most unsteady organ, expanding or contracting in never ending cycles, and a most pronounced heretic when considered from the standpoint of the gospel of rest. However, when a satisfactory collapse has been secured, the heretic is handcuffed and securely bound in one place where it may be held for months or years if it seems necessary.

An ex-Pokegama patient, whose collapse was indicated by a hemorrhage that kept on in spite of anything that could be done to control it, is now in the fourth year of his pneumothorax. He has been actively engaged in business for eighteen months. Since the lung was collapsed there has been no recurrence of his hemorrhages.

In serious hemorrhage cases artificial pneumothorax scores its most signal triumphs by collapsing the cavities and giving nature's hemostatics an opportunity to perform their various functions efficiently.

Widespread strong adhesions over the diseased portion of the lung often prevent any satisfactory collapse around the seat of hemorrhage, even if the collapse of other portions of the lung has made it possible to introduce quite a quantity of air. Fluoroscopic control at the time the collapse is made thus becomes of the greatest importance.

Collapse is also indicated in one-sided rather acute tuberculosis. The other lung must be free of râles and extensive consolidations, and the abdominal organs must be above reproach symptomatically and negative to *x*-ray examination aided by barium meal and enema. Under these conditions the patient usually improves rapidly. The expectoration ceases, fever recedes, appetite and a feeling of well-being take the place of the lassitude of the rapidly failing patient whose constant cough and excessive expectoration had used up every bit of energy and strength he possessed. The rapid improvement of properly selected cases is most gratifying and makes one quite willing to agree with Krause in his praise of the procedure.

Artificial pneumothorax should never be induced, except to control hemorrhage, without a full understanding with the patient that it must be maintained for a least a year, and often longer. The latter part of this period the refills are usually a

month apart, and the patient reports to the physician's office at regular times, where the air is introduced and the return home promptly follows.

The physician who cares for tuberculosis in its manifold manifestations has frequently to call on the surgeon for assistance. Glandular tuberculosis except for cosmetic reasons should not be considered an indication for operation. The operations on cervical glands, at one time so popular, have been abandoned by most surgeons as futile, since the operation from the very nature of the case can never be complete and recurrences are always to be expected.

The same may be said of resections of tuberculous intestines, which was always accompanied by such a high mortality that it could not have become a popular procedure either with physician or surgeon. Now that the lamp promises a considerable measure of success its use will probably supplant the operation entirely. As Lawrason Brown says, the lamp is at least not accompanied by such a large initial mortality.

The orthopedic surgeon is in reality a tuberculosis specialist, so largely are his patients the victims of a general tuberculosis more or less localized in the bones and joints. The hospitals for crippled and deformed children should all primarily be heliotherapy institutes, helped out in this northern climate with quartz lamps. At the Rollier sanatorium operations have been reduced to a minimum, mutilations are avoided, articular function is seldom lost, and it is his special pride to return his patients to the world as complete individuals capable of a normal existence.

Old cases of empyema require surgical treatment. For this class of deforming chronic inflammations within the thorax Dr. Emil Beck's skin sliding graft meets the conditions and secures the best end results with less deformity than any other surgical procedure.

There is a large class of cases which would be suitable for artificial pneumothorax, but on whom it is impossible to do a collapse on account of adhesions between the two pleural layers.

The operation of extra pleural thoracoplasty fills the same indications as pneumothorax and offers these patients a means of escape.

K. Turban was the first to remove sections of a number of ribs in unilateral pulmonary tuberculosis. This was in 1899. Some years later experi-

ence with pneumothorax treatment showed that to be successful the collapse of the lung must be complete. The present operation answers this requirement quite fully. Modern thoracoplasty is a European operation, and to European sources we must turn for statistics. Brunner reports that in 381 cases, 35 per cent were apparently cured by operation. In 116 recent cases at Munich 66 per cent were successful. Prof. Sauerbruch's operations total over 500 cases, and Wilms has also operated on as great a number. (*Archiv. für klinische Chirurgie*, Berlin, 1922.)

Dr. Archibald, of Montreal, has operated often and was probably the first surgeon on this side of the Atlantic to take up the operation.

The operation consists of the removal of a section of each rib from and including the first to the tenth. The resection must be made very near the vertebral articulation. From one to two or three inches are taken from each rib, the shorter pieces from the upper ribs. This allows the side to be flattened in, as the anterior end of the rib is not as immovably fixed as the posterior is. The operation should be done under local anesthesia, and to keep the initial mortality low should be done in two or more stages.

One of the most serious complications of tuberculosis, and quite a frequent one, has been the combination of diabetes with tuberculosis. For these unfortunates a new hope seems to be shining on the Eastern horizon, for the use of insulin with sanatorium régime has worked wonders in cases that were not hopelessly advanced before beginning treatment. At Pokegama we are most enthusiastic over results so far attained.

And now we have all of these, but the greatest of these is rest.

STUDIES IN THE COMPARATIVE VALUES OF MOUTH AND RECTAL TEMPERATURES —A PRELIMINARY REPORT*

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What we consider fever has been the index to man's well-being since the beginning of medical history, and as we pass through the ages and read

medical literature we find that fever is one of the cardinal symptoms of all diseases. In fever, the physician sees not only a feature of the disease calling for treatment on its own account, but he recognizes in it an indication of an underlying intoxication.

The methods of ascertaining whether an individual had a fever were varied. The ancients used a very unreliable method, that of touch, placing their hand upon the body, usually the forehead. Today, we use an instrument supposedly of precision—the fever or clinical thermometer—to register the body's temperature. These thermometers have been perfected to register temperature in one to two and three minutes.

Temperatures are taken for various purposes: (1) for diagnostic purposes; (2) as a guide to treatment; (3) merely as a matter of record.

In taking a temperature, no matter for what purpose, accuracy is the keynote. If it is worth while taking, it is worth taking well.

Some of the factors which must be taken into consideration in obtaining a temperature reading are: the thermometer itself, infancy and senility, the presence of throat infections, abscess formations, unconsciousness, excitement and exercise, the ingestion of hot or cold liquids, the honesty of patients and the ability of patients to take their temperature accurately.

Different authorities accept different normal standards. Dr. H. A. Bray cites the following in his article on "Fever in Tuberculosis":

Wunderlich, axilla 99.94° F., mouth 99.3° F.

Vierordt, mouth 99.6° F.

Turban, mouth 98.9° F.

Stewart, axilla 99.5° F., mouth 99.1° F.

Foster, axilla 36° C. to 37.5° C., mouth 0.25° to 1.5° C. higher than axilla.

Finlayson, mouth 98.6° F.

Sahli, mouth 99.32° F.

Quite a variation, but what does it mean? There is no accepted standard for fever or for method.

There are several advantages and disadvantages for each method. Too much stress cannot be placed upon the importance of technique and the thermometer used in recording the temperature reading.

In our sanatorium, and I suppose in other sanatoria like methods prevail, we allow our patients (unless they are very sick) to take their own temperatures and report the readings to the nurse as

*Read before the annual meeting of the Minnesota Sanatorium Association, Wadena, Minn., July, 1923.

she makes her rounds for such purpose. She then records them. In another sanatorium with which I am familiar, they allow one patient to take the temperatures and this in turn is reported to the nurse, who makes the necessary record of the same. These methods are not very exact, and the honesty of some patients can be questioned, particularly where the patient is reluctant to go to bed.

Some objections to mouth temperatures to be considered are: extra large nasal passages, coughing, drinking hot and cold liquids immediately before taking temperatures, infants, aged and the unconscious, the position of the thermometer in the mouth (whether under the tip or back of the tongue), and whether the lips are tightly compressed.

The objections raised to rectal temperatures are: (1) patients, on exercise, returning from their walk or work find it a nuisance to remove their clothing in order to take the temperature; (2) local heat around a rectal abscess will raise temperature; (3) some patients with hemorrhoids complain of pain while inserting the thermometer.

Axillary temperature cannot be taken to advantage. In case of unconsciousness, perhaps yes, then in a fat person only, but certainly not in children or emaciated people.

When temperature is being taken per rectum, it is absolutely necessary for the patient to lie down and remain quiet while the thermometer is in place. Then we know that a patient is at rest while the temperature is being taken. The same cannot be said of mouth temperature, for patients can walk around while they are taking their temperatures, and do. They talk and the lips are not in constant contact and false readings are obtained.

Then again some patients (unless they are watched) are so apt to remove the thermometers from their mouths to note the readings and just as soon as the mercury reaches normal limits they report the temperature as normal. These conditions do not take place with a rectal reading.

Waiving all usual methods and the likes and dislikes of the person taking the temperature readings, it is an accepted comparative standard that rectal temperature is 1° higher than mouth and the axillary 1° lower than the mouth in the same person. To establish definite relations between mouth and rectal temperature is in part the purpose of this paper.

In determining the temperature variations in these cases, the natural method of pursuit was merely to take temperatures at our usual time, 7 A.M., 3 and 7 P.M., as was our custom, and merely take an additional mouth temperature at the same time. The patients were cautioned as to talking, compressing lips tightly, drinking hot and cold liquids immediately before, and to allow the thermometer to remain in position for five minutes.

In comparing the mouth and rectal temperatures, one of the first things noticed was that when the mouth temperature rose, the rectal temperature did the same; when the mouth temperature fell, the rectal temperature fell. However, the degree of change was not always the same. If a rectal temperature rose 1 degree, the mouth temperature might rise .8 of a degree or some other amount. As a rule, however, there was fair degree of sameness in the changes of both mouth and rectal temperatures, and, with these variations in mind, it might be said that the two temperatures kept in step.

When I commenced to ascertain which method of taking temperatures was most reliable, little did I dream of the magnitude of the work. It was necessary for me to call in my colleagues and between us we learned some alarming truths.

After examining one hundred patients over a period of three months, temperatures being taken three times a day under our usual schedule, mouth and rectal temperatures being taken synchronously, care being taken that all conditions were equal, and trusting to the patients' honesty, the nurses' ability and the accuracy of the thermometer, we had the following results after examining eighty of the charts of adult patients with a total of 22,280 temperature readings.

Combining the morning, noon and evening temperatures, we had these registrations:

1,173 where both the rectal and mouth temperatures registered the same.

2,498 with $.2^{\circ}$ variation.

4,739 " $.4^{\circ}$ "

3,825 " $.6^{\circ}$ "

3,128 " $.8^{\circ}$ "

2,667 " 1° "

872 " 1.2° "

324 " 1.4° "

177 " 1.6° "

63 " 1.8° "

22	"	2 °	"
10	"	2.2°	"
3	"	2.4°	"
2	"	2.6°	"
3	"	2.8°	"
1	"	3 °	"

There were also a number of readings where the mouth temperature was higher than the rectal.

These comparative temperature readings were taken only for the purpose of ascertaining the reliability of the methods in vogue and upon which method the greatest reliance could be placed.

From the great number of mouth and rectal temperatures registering the same and from the great degree in variation in some of the registrations, we felt that there was a discrepancy somewhere. So we took corresponding readings of 20 children over a period of four weeks under the following conditions:

1. Temperatures taken at 8 and 10 A. M., and 1, 3, 5 and 7 P. M.
2. The mouth and rectal temperatures were taken synchronously.
3. The thermometers were left in position five minutes.
4. If both thermometers registered the same, both thermometers were shaken down and replaced and left in position fifteen minutes instead of five minutes.
5. If rectal temperature was lower than mouth, the rectal thermometer was shaken down and replaced and left in position fifteen minutes.
6. If mouth temperature dropped instead of rising with rectal temperature and if the cause could not be learned, the thermometer was shaken down and replaced and left in position fifteen minutes instead of five minutes.
7. All were selected cases and care was taken that there were no local manifestations to interfere with the readings.
8. No patient was allowed to cough, sneeze or laugh during the taking. If it so happened, the patient was allowed to rest and the readings were retaken.
9. All patients were at absolute rest in bed while the temperature was being taken.

10. Thermometers were tested weekly against a standard.
11. The temperatures were taken by usual mouth and rectal method for two weeks. The thermometers were then reversed. The mouth temperature was taken with a rectal thermometer and the rectal temperatures were taken with a mouth thermometer for a period of two weeks. Then the thermometers were reversed back and forth on alternate days in order to make doubly sure that there was no error.
12. All patients used individual thermometers, which were numbered.
13. A reliable graduate nurse did police duty at the bedside to see that all conditions were met, with the following results:

RESULTS

Hours	.....	8	10	1	3	5	7
Same	.....	25	16	23	15	16	113
0.2	.....	61	34	61	62	52	330
0.4	.....	72	65	71	89	67	427
0.6	.....	63	76	47	65	72	380
0.8	.....	55	48	58	65	64	371
1.0	.....	53	72	63	54	57	360
1.2	.....	37	53	51	43	40	260
1.4	.....	35	41	33	24	29	193
1.6	.....	29	24	18	18	24	134
1.8	.....	16	10	10	16	11	74
2.0	.....	9	19	6	15	9	68
2.2	.....	4	6	8	6	8	44
2.4	.....		1	2	2	4	15
2.6	.....		2			2	4
2.8	.....		1			2	3
3.0	.....		1			1	2
3.2	.....					2	2
3.4	.....					
3.6	.....		1				1
	.....	5	4	6	4	5	28

The above table shows the results obtained as the following:

113	showed	.2°	variation.
330	showed	.2°	variation.
427	"	.4°	"
380	"	.6°	"
371	"	.8°	"
360	"	1 °	"

260	"	1.2°	"
193	"	1.4°	"
134	"	1.6°	"
74	"	1.8°	"
68	"	2 °	"
44	"	2.2°	"
15	"	2.4°	"
4	"	2.6°	"
3	"	2.8°	"
2	"	3 °	"
2	"	3.2°	"
1	"	3.6°	"

During the course of these observations there were twenty-eight occasions where the rectal temperature was lower than the mouth temperature, the range of variations being from .2 to 1 degree, but we consider this a negligible factor.

CONCLUSIONS

While our observations were for the purpose of showing the degree of variation between mouth and rectal readings, we could not help but notice that the accepted standard of 1 degree between rectal and mouth temperature did not hold true, because in our series we found that 0.4° was the most prominent variation in both children and adults.

While this was the most frequent variation, it was by no means constant. It might be almost as great an error to assume 0.4° variation in every case as it would be to assume 1° variation. In the former case, you would be right in about 5 per cent of the cases, and in the latter 1 per cent.

While the degree of change between readings was not the same between rectal and mouth, they tended to rise and fall at the same time.

From the standpoint of the sources of error we concluded that rectal readings were more reliable because, from the standpoint of the thermometer itself, we found the rectal or mouth thermometers are equally reliable in obtaining readings.

With the thermometer in mouth, the patients do not keep the lips compressed firmly on the thermometer for a period of five minutes, and five minutes in a great many cases is insufficient time. The acts of coughing and sneezing and laughing are a detrimental factor in mouth temperature. The element of co-operation of patients is not constant. These conditions are eliminated by rectal readings.

The rectal range of temperature is more constant and the variations are not so marked.

THE MANAGEMENT OF ACUTE BRAIN INJURIES*

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Though there has been a great advance in the treatment of acute cerebral injuries, there still seems to be some confusion as to the proper course to pursue. There are, and have been from the earliest times, two schools with their adherents, the one advocating a policy of "hands off" and "watchful waiting," the other insisting on active interference in practically all cases, with the result that there has been an exceedingly high mortality. The advocates of either line of treatment are both right, for there are undoubtedly cases that should always be operated on, but when either school insists upon their treatment to the exclusion of the other there is bound to be a high mortality. The result has been an attitude of pessimism on the part of the profession in general and they have acknowledged their helplessness when anything affecting the "master tissue of the body" was present. This feeling may well be expressed by the quotation from Pearce Bailey, "If the patient recovers, remarkable, he had a fracture of the skull; if he dies, well, he had a fracture of the skull." Statistics collected by Besley and Sharpe were discouraging. The former, analyzing 1,000 consecutive cases of fracture of the base of the skull at Cook County Hospital, found that there was a mortality of fifty-three per cent; whereas, Sharpe, in studying the cases of brain injury in three large New York hospitals from 1900 to 1910, found that the mortality varied from forty-eight to sixty-eight per cent. The recent war and the observations of various men, especially those of Cushing and his associates, directed our attention to the subject again. Renewed interest became apparent and it brought out the fact that many cases hitherto considered hopeless were amenable to surgical treatment, but this treatment must be well timed—not haphazard. A careful review of the experimental work done by numerous men shows that the profession has not applied the lessons learned to their clinical cases when confronted with the problem of treatment. Sharpe, who has made a long study of the problem, has written extensively on the selection of cases for treatment and the

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proper time for interference, while recently Jackson has presented his experiences and has attempted to lay down certain rules in treatment based on the pathology present. The combined work of these men reveals the fact that treatment must be based on the correct interpretation of symptoms with a knowledge of the underlying pathology; in other words, every case must be a law unto itself. The symptoms encountered in any case are due to a derangement of intracranial pressure; whether the injury be mild or severe; whether one is dealing with a penetrating or perforating wound, a depressed fracture or a fracture of the base of the skull.

In the following paper an attempt has been made to review some of the literature from an experimental view. This has been supplemented by a report of a small series of cases that the writer has observed and treated during the past three years with the idea of arriving at some definite conclusions with reference to the prevention of the so-called traumatic neurosis.

When a patient is brought in with an acute brain injury, the surgeon is confronted with two questions: What and where is the lesion? And what is the proper mode of treatment? These questions can be answered by having a thorough knowledge of the pathology. The picture presented may vary all the way from a slight restlessness with headache to unconsciousness with a slow hard pulse, deep regular respiration and subnormal temperature—to one of unconsciousness with either a small running pulse of low tension and a cold clammy skin, or with a small running pulse of low tension, a high temperature and a shallow rapid respiration. All these stages are different pictures of a changing pathology found in the cranial cavity. Inasmuch as the brain is easily compressible and lying within a rigid cavity, the various phenomena which take place are pressure phenomena. This pressure is dependent upon the adequacy of the cerebral circulation of both the blood and cerebro-spinal fluid. The degree of pressure accounts for the type of symptom complex presented. The text books have an elaborate classification of concussion, contusion and laceration, but to the writer's mind the more logical would be shock and compression—compensated or uncompensated—associated with laceration, contusion and fracture. We have been too prone to focus our attention on fractures, but, with the

exception of depressed fractures, they are incidental; it is not the fracture that we are interested in primarily, but the condition of the soft structures underneath. This derangement in the brain tissue is what produces the symptoms, which vary with the degree of injury as well as with the location of that injury.

The earliest experimental work was done on the human subject by Boerhave in 1712. At that time there was a beggar in the streets of Paris who had lost a portion of his skull, leaving his brain protected only by the dura mater. For a few centimes he permitted Boerhave to note the effects of pressure. Boerhave found that by gentle pressure with his finger, the beggar seemed to see a thousand stars before his eyes; and upon pressing still more forcibly, his eyes lost all their sight; and by pressing still more strongly on the dura mater, he fell in a deep sleep, which was attended with all the symptoms of a slight apoplexy. When the pressure of the hand was removed he gradually recovered from the symptoms as they were brought on, the apoplectic symptoms first vanishing, then the lethargy and lastly the blindness, so that all his senses recovered their former perfection. This actual experiment on the human being is of interest as it is analogous to what happens in animals on experimental pressures. In the 18th century, von Heller began studying cerebral compression in dogs. He found that with moderate pressures the dogs evinced pain, but on strong pressures they fell asleep and snored. Later, in 1837, Sir Astley Cooper, who was working on dogs through a trephine opening, caused, first, pain and irritative symptoms; second, slowing of the pulse and coma. In the same year, Magendie demonstrated the existence of cerebro-spinal fluid, and while working on a child with spina bifida he found by compressing the sac that the fontanelles bulged and that somnolence took place. From that time on numerous workers were engaged in the same work, some of whom did their work by local compression—that is, by working through a trephine opening and increasing pressures locally—while others did theirs by general compression by injecting fluids into the subarachnoid space so that the fluid was disseminated over the whole brain, thus producing a generalized increase of pressure. Von Leyden was an advocate of the generalized method of experimentation, while Hill, Horsley, Spencer, Donders and Cushing all used the local method. All the work seems to indi-

cate that there is practically no difference whether the one method or the other be used; this is shown by the classical work done by von Leyden and by Cushing—each working by different methods and the work of one confirming that of the other. Von Leyden had found that a pressure of 50 mm. of mercury produced pain and restlessness which he ascribes to irritation of the dura, while unconsciousness appeared at 130 mm. Slowing of pulse was sometimes noted at 50 mm.; was constant at 75 mm. and this slowness continued up to 150 mm., while above this it became smaller and more irregular the higher the pressure. The pupils dilated only on high pressures. Von Schulten proved that, as the compressing force increased, the blood-pressure increased. This he ascribed to the action of the pressure on the vasomotor centre in the medulla; this phenomenon keeping on until exhaustion of the centre takes place, when the blood-pressure drops and death results. This he termed the life and death struggle. Cushing, working in Kocker's laboratory, worked through a trephine opening into which a window had been inserted so that he could observe the effects of various pressures on the cerebral circulation and correlate them with other symptoms. He found that as the pressure increased, there took place a difference in the appearance of the arteries and the veins—with some widening of the veins. When this pressure is still further increased the capillaries grow pale, the brain loses its reddish color and the veins running across the convolutions collapse, while those in the sulci remain dilated. This results in a capillary anemia of the brain tissue, and when this affects the medullary centres they are stimulated in such a way that the pulse becomes slower, respiration deeper and fuller, while the blood-pressure goes up. This process of increasing the intracranial pressure with subsequent rise of the blood-pressure can be carried out indefinitely until the medullary centres become exhausted. This was what von Schulten had called the life and death struggle between the compressing force and the vasomotor centre.

In the human subject, what are the underlying causes of the rise in intracranial pressure after injury? The brain reacts to trauma in the same way as the other tissues where the blood vessels have been torn. If the injury is mild, only a small amount of serum is poured out, separating the cells and causing a localized edema; if it is severe, there is a tearing of the capillaries and smaller vessels

with subsequent hemorrhage into the pia and arachnoid spaces; while in real severe cases there is laceration of the brain tissue with hemorrhages into the brain substance. Apfelback, in studying "Bruises of the Brain," says that, aside from the lacerations occurring at the time of injury, most bruises come as a result of the tearing of and the bleeding from the pial arteries between the gray and white material. The blood, if excessive, dissects its way out through the friable gray substance toward the periphery. In any injury, from the mildest to the most severe, there is therefore a disturbance of the circulation in such a way that the delicate strands of tissue surrounding the pacchionian bodies and supracortical veins are destroyed; the cerebrospinal fluid is not absorbed; and, as the choroid plexus continues to secrete, the normal flow of fluid across the cortex is interfered with, and it accumulates at the base of the brain in the cisterns. A vicious circle is then set up, for the arteries keep carrying blood in, and the exuded blood mixing with the increasing cerebrospinal fluid adds insult to insult. Intracranial pressure increases; the tissue becomes water-logged; cerebral edema takes place; and a condition is produced which simulates the picture seen in the experimental animal—cerebral and medullary irritability followed by compression and collapse.

Translated into clinical observations, then, we have the changes that manifest themselves as symptoms which are due to pressure changes in two portions of the brain—the one cerebral, the other medullary. They are first irritative or stimulating and then depressing. Mild changes show themselves in the cerebrum only as sensory, motor or memory phenomena; that is, the patient complains of headache; he is restless, irritable and irrational, and if the injury is over the motor area there will be paralysis, but with no particular disturbance of pulse, respiration or temperature indicative of medullary change. In greater pressures, the cerebral centres are put out of commission, for consciousness is lost and the medulla is affected. At first the pressure is stimulating, for the pulse becomes slow, the blood-pressure rises and the respiration deepens, all pointing to stimulation of the vagus, vasomotor and respirator centres respectively. If the pressure increases from further accumulation of extravasated blood and fluid, the pressure become depressant, for the centres in the medulla collapse; the pulse becomes rapid, small, irregular; the blood-pressure

drops; the respiration becomes shallow and rapid while the temperature climbs high as death supervenes, for the life and death struggle in the medulla has been enacted. This is the regular order of procedure, termed the stages of compression and collapse.

To the picture presented above must be added the one that is seen soon after an injury. The pulse is rapid, respiration shallow, blood-pressure low and the temperature subnormal, with a cold clammy skin usually associated with unconsciousness. This is due to the sudden overwhelming stimulation of the medullary centres and is shock. If the injury is located in the occiput or on the base in the posterior cerebral fossa, the patient may not go through the regular steps pointing to compression, but go directly over into the stage of collapse with early death.

If now a patient comes in with an injury to the brain, what is the correct treatment? Shall it be expectant or shall it be one of interference, and if so, what type? These questions can be answered by keeping in mind the results of the animal experiments and by observing the various symptoms that point to what is going on in the cranial cavity. The surgeon must also consider that the purpose of the treatment he institutes must be two-fold: (1) to save life, (2) to prevent that train of symptoms occurring in the patient which are termed the traumatic neurosis and which are manifested by headaches, dizziness, nervousness, convulsions, etc., conditions that will produce an individual who leads a vegetative existence rather than one who can be a wage earner. The one form aims to protect the medullary centres while the other is concerned over the cerebral centres. A careful examination, together with a lumbar puncture, will reveal this, for it will show the degree of pressure and the probable location of the lesion.

Patients who show only cerebral symptoms without unconsciousness, but who are restless, irritable and semi-stuporous, complaining of headache, belong to the class of expectant treatment. If, however, the spinal fluid is bloody and under higher pressure than the normal seven to nine mm., then puncture should be repeated until the decrease of symptoms takes place; but if symptoms increase and the spinal pressure steadily mounts, then operation should be resorted to. In all cases where the patient is unconscious and presents either the picture of shock or collapse, it is the policy of wisdom

to defer any radical treatment. In both of these stages any manipulation will hasten exitus rather than delay it and at the same time bring operative treatment of brain injuries into disrepute. To give the individual the best possible chance, the one in shock should be given shock treatment by lowering the head, applying external heat and giving warm coffee enemata. When the stage of shock has passed and the stage of compression commences with its slow pulse, rising blood-pressure and slow deep respiration, then lumbar puncture should be done to ascertain the degree of pressure, and, if necessary, perform operation.

Patients in whom no depressed fractures are found, and who show the characteristic symptomatology of compression, should be decompressed. If symptoms point to a definite locality, such as over the motor cortex, resulting in paralysis, the opening should be over that point to evacuate any blood clot present but if there are no localizing symptoms a subtemporal decompression is the operation of choice with opening of the dura widely by a cross incision. In increasing pressures the dura is tense, sometimes bluish in color, and has lost its pulsation because of cerebrospinal fluid and blood which has filled up the subarachnoid space. On making the opening the fluid spurts out five to twelve inches and the cortex begins to pulsate. Usually the brain looks water-soaked and presses into the decompression opening; therefore, the opening should be at least one and one-half to two inches in diameter or otherwise the operation defeats itself. A rubber drain is inserted and the muscles sutured over the defect. This allows a continuous drainage of spinal fluid into the soft tissues until nature can readjust herself and care for it normally.

In patients with depressed fractures accompanied by incised or lacerated wounds, the obvious treatment is exploration. This exploration should be not only the purpose of wound excision but also to lift up or remove any bone fragments or foreign material driven into the brain substance through the dura. However, one should not wait until urgent symptoms appear since these may be late in coming, as the writer noticed in cases seen in the world war. The earlier this is carried out, the better, for it prevents infection and pressure on the underlying brain substance. The mode of procedure should follow the technique described by Cushing so well.

Of late there has been a tendency to treat many of the brain injuries by lumbar puncture alone. Jackson is a strong advocate of this method and he presents a large series of cases that is very convincing. He resorts to operation only when absolutely necessary. In over 1,000 punctures, he has had no untoward effects. That lumbar puncture is not without danger is shown by a case reported by Archibald.

During the past four years the writer has observed the following cases. Two of them were reported previously. These have been carefully gone over with the idea of trying to gain some knowledge as to the question of the post-operative neurosis.

CASE 1.—E. V., aged two and one-half, was seen on July 20, 1919, eight hours after injury. This was due to the kick of a horse over the right parietal region which was followed by immediate unconsciousness. At the time of examination patient was unconscious and there was a contused, bleeding wound, 1.5 cm. long, in the right parietal region through which a small amount of brain tissue was escaping. The pupils were dilated and there was a marked weakening of the reflexes of the right arm and leg. Pulse 106, resp. 20.

Operation: Tripod incision. Excision of wound edges revealing a compound comminuted fracture over the right temporal and parietal region—with a linear fracture passing up onto the vertex and down toward the base in the region of the posterior fossa. The depressed bone was removed, leaving a defect 3x4 cm. The dura was lacerated and there was profuse arterial and capillary hemorrhage. Hemorrhage controlled; cortex cleansed and a rubber tissue drain inserted at lower angle. Skin closed with silkworm gut.

Subsequent course: Patient in shock but rallied. A cerebral hernia took place, but receded under the use of pure formalin painted over it. Wound completely healed on October 31, 1919.

Present condition: Letter from father: Patient well developed and apparently has no ill effects from his injury.

CASE 2.—T. T., aged 26, grain buyer by occupation, slipped and fell, striking head on rail. Unconscious immediately; seen twenty hours later, on July 30, 1919.

Examination: Patient in coma. Over left parietal region is an area of edema and ecchymosis. Pulse 52, temp. 99, resp. 22. No evidence of any paralysis. Lumbar puncture shows fluid slightly blood tinged and under moderate pressure.

Operation: Subtemporal decompression left side. Bloody spinal fluid under pressure escaped on incising of dura. Closure of wound in layers. Rubber tissue drain in lower angle.

Course: Stormy convalescence but patient recovered, being sent home August 21, 1922.

Present condition: Unable to do any work for one year. Now working in elevator as grain buyer. Terrific headaches at times. Has periods of nervousness and dependency.

CASE 3.—M. M., aged 15, seen on June 2, 1920, in

consultation with Dr. G. S. Wattam. While riding horseback she was thrown onto her head and was picked up unconscious. This happened two days previously. On examination she was found to be irrational and very restless, throwing herself across the bed complaining of headache. There was no disturbance of reflexes but her pulse was 56, temp. 97.6, B. P. 116-74. The x-ray showed a fracture in the right occipital region.

Treatment: Lumbar puncture with clear fluid under considerable pressure, 40 c.c. removed. Headache and restlessness disappeared.

Course: Patient discharged June 18, 1920.

Present condition: No complaints, no headaches or dizziness. Can work as well as ever.

CASE 4.—J. F., age twelve, was seen on August 21, 1920; ten hours previously he had been struck by the handlebars of a bicycle. He was unconscious for two hours, vomited three times and gradually regained consciousness to be followed by a period of semi-consciousness and stupor.

On examination there was a bloody discharge from the nose. He was semi-stuporous, moaning and throwing himself around in bed. There was no disturbance of reflexes. Over the left frontal region just above the eye there was a small, incised, lacerated wound. The tissues around the left eye were discolored and edematous so that the lids could not be opened. Pulse 63, temp. 97, B. P. 112-80.

X-ray examination showed a depressed fracture under the area of injury. Lumbar puncture did not reveal any increase of tension but the fluid was apparently pure blood; 10 c.c. were taken off. Since there was evidence of a depressed fracture, and even though the fluid was not under pressure, operation was advised since the stuporous condition continued.

Operation: Wound excision revealing a depressed fracture of frontal bone above orbit with extension into the orbit. By means of a drill an opening was made so that the depressed bone could be removed, leaving an opening 1.5 inches in diameter exposing the dura. It was tense, there was no pulsation and the color was blue. A cross incision was made in the dura and bloody fluid spurted out a distance of 6 or 8 inches. As soon as this happened the cortex was seen somewhat wet, but pulsating normally. Rubber tissue drain inserted—wound closed in layers.

Course: Drainage profuse for twenty-four hours, stupor cleared up and he was discharged apparently well on September 10, 1920.

Present condition: No complaints. Works like any of the other boys.

CASE 5.—Earl B., aged 25, seen August 30, 1920, six hours after injury. Six hours previously while threshing he was kicked in the forehead by a horse. He was not rendered unconscious but bled freely. He was given first aid by Dr. A. S. Hoiland and sent to the hospital.

On examination he was semi-stuporous but could be aroused. There was a long transverse wound in the forehead above both eyes. The entire upper portion of the face and forehead had apparently been pushed one and one-half inches inward. Hemorrhage was profuse and an opening was seen extending into both frontal sinuses. The pupils were dilated and there was no reaction to light or accommo-

dation. He could see indistinctly. Pulse varied from 43 to 43, B. P. 140-70.

Operation: Wound excision showing an extensive fracture of the frontal bone and the nasal bones pressing back into the floor of the anterior fossa. Both frontal sinuses rongueured out exposing the dura over both frontal lobes. By an elevator the nasal bones and the nose were lifted back into place. Hemorrhage, profuse, from the anterior end of the longitudinal sinus was controlled by packing. Dura was not opened because of the communication into the nose. Wound closed in layers with drain inserted.

Course: Uneventful. Drain removed in forty-eight hours. Discharged well on September 23, 1920, but showed that there was a permanent dilatation of right pupil with inability to look outward because of paralysis of external rectus.

Letter, May, 1923: Whenever he has a cold it seems to settle in his old wound and it swells up. This is accompanied by headaches. When this occurs he gets dizzy and must go to bed. He then becomes nervous. He is able to work. What evidently takes place is an ascending infection from his nose with pressure over the frontal lobes, this continuing until the cold disappears and drainage takes place through the nose.

CASE 6.—Mrs. H. O., aged 43, seen on July 1, 1921. Four hours previously an automobile in which she was riding had been struck by a train. She was brought in unconscious with Cheyne Stokes respiration. Right pupil dilated, left contracted. Pulse 96, B. P. 110-70. There was a contused area with edema over the left temporal region.

Operation: Subtemporal decompression left side. Brain tissue badly lacerated.

Course: Death in six hours.

CASE 7.—J. O., age six, injured twenty hours previously by being thrown against the cement curb by an automobile. He was seen in consultation by my associate Dr. T. Bratrud ten hours after his accident, and by myself twenty hours after the accident. Dr. Beiderman, the attending physician, says that he had vomited blood twice.

Examination showed that he was very restless and resistant. There was no disturbance of reflexes. Marked ecchymosis of tissues around both eyes. Over the left parietal region there is a contused area and there is a continual drainage of spinal fluid from the left ear. Pulse 130, temp. 101.

Inasmuch as there was apparently a decompression through the ear nothing active was done, but spinal puncture was recommended if stupor increased.

Course: Patient gradually cleared up. At present he is to all appearances normal and in good health.

CASE 8.—J. N., aged 50, injured two days previously by falling down from a church steeple, striking on the left side of the head. He was unconscious, very resistant and could not be aroused.

Examination showed reflexes increased on the left side, diminished on the right. There was a contused wound over left temporal region. Pulse 93, temp. 100, resp. 20.

Spinal puncture revealed a blood tinged fluid not under pressure, five c.c. withdrawn.

Treatment: Spinal puncture following day under slightly more pressure, forty c.c. withdrawn, still bloody. Fol-

lowing day more comatose, and because of request of relatives for operation decompression was done although the favorable time had passed. No increase of intracranial pressure, marked destruction of brain tissue.

Course: Death, six hours post-operative.

CASE 9.—D. K., two years of age, first seen September 2, 1922, six hours after injury. While playing he fell on a plow shoe which penetrated the skull and passed about two inches into the brain. There was a profuse hemorrhage followed by a somnolence.

Examination: Patient is sleepy but can be aroused. There is a lacerated, incised wound one inch long over right parietal region through which bone fragments can be felt with a probe.

Operation: Wound excision, rongeur away of bone fragments. Three pieces of bone removed from within the cortex where they had been driven in. Brain tissue lacerated to a depth of one inch. Debris removed through catheter suction. Rubber tissue drain closure of wound in layers.

Course: Abscess, cortical, developed which discharged through the wound. During the time of development there was continual twitching of muscles of the left side of the face and of the neck and arm. Discharged September 22, 1922.

Present condition: Father says he is as well as ever.

CASE 10.—L. G., aged 40, seen June 11, 1922, under the care of Dr. G. S. Wattam, five hours after injury. During the afternoon he was struck on the head by a wire puller. He was unconscious for one and one-half hours, and when seen by Dr. Wattam he was stuporous and bleeding freely from wound on left side, complaining of headache. Pulse 84, temp. 99.

Examination: Drowsy, makes several attempts at vomiting. Pupils equal, react well. One and one-half hours later, pulse 120, B. P. 120-84. Knee jerks more marked on right than left. Profuse discharge of blood and spinal fluid from left ear.

Operation: Wound excision, subtemporal decompression. Dura tense and bulging. Incision of dura liberated a blood clot after which the spinal fluid spurted out eight or ten inches. A lacerated vein on the cortex from which the bleeding had occurred was ligated. Rubber tissue drain, closure in layers.

Course: Free drainage from wound. Patient brighter for three days when headaches recurred. Lumbar puncture showed cloudy spinal fluid under pressure. Lumbar puncture done daily for five days, after which he got along nicely. At present he is nervous and emotional. He has had two convulsions. Headaches are severe at times. He can work, but not as he did before.

CASE 11.—C. P., aged 62, kicked by a horse. He was conscious but there was a marked edema over the left side of head. He became restless, complaining of pain in the head followed by a period of stupor.

Examination: Edema over left temporal region with sensation of fluctuation. No evidence of any paralysis. Patient can be aroused. Temp. 93.4, pulse 50, B. P. 120-80.

Operation: Subtemporal decompression left side with moderate degree of pressure present. Dura tense, bluish in color. Subdural clot released. Cortex lacerated. Rubber tissue drain, closure in layers.

Course: Very restless and unruly. Lumbar puncture done eight times. Fluid bloody, under moderate pressure, amounts from three to forty c.c. withdrawn.

Present condition: Feels almost normal, but has not done hard work. No severe headaches, some nervousness and dizziness.

CASE 12.—H. R., aged 26, ex-service man, seen November 2, 1922, one-half hour after injury. Shot himself in right temporal region, conscious. Severe bleeding from wound, vomited freely.

Examination: Skin cold and clammy; no paralysis; edema and protrusion of right eye-ball with loss of sight. Pulse 75. Because of shock being present patient was treated expectantly for six hours, after which a period of somnolence supervened from which the patient could not be aroused. X-ray revealed the bullet in the left parietal region about an inch in the cortex.

Operation: Wound excision; rongeur away the bone; evacuating blood clot and debris. Blood clot in the right orbit evacuated. Bullet track cleansed with normal saline through catheter.

Course: Patient recovered from operation very well. Profuse drainage from wound. On tenth day patient began showing evidence of beginning brain abscess and steps were taken to remove the bullet.

Second Operation: November 14, 1922. Localization of bullet by fluoroscopy. Flap turned over left temporo-parietal region. Old blood clot, partially absorbed, found over the cortex after dura was opened, blood pigment deposited all along the cerebral vessels. Bullet located one inch below surface removed with some destruction of tissue. Rubber tissue drain to cortex and closure in layers.

Course: Patient recovered from operation but was left with an aphasia. Committed to State Hospital December 18, 1922. Present condition unknown.

COMMENT

In reviewing this series of cases it is noted that no one method of treatment has been followed. The aim has been to treat every case by itself according to the indications present. After careful study it is felt that cases 6 and 8 should not have been operated on. Case 6 had other injuries besides her head injury, evidently being in shock and medullary collapse, so that operation hastened exitus rather than delayed it. Case 8 was seen in a farmhouse a long distance from the hospital, and was treated at home under difficulties. Operation was justifiable but was carried out when the favorable stage of compression had passed. In case 7 nothing active was done, though lumbar puncture was recommended, if necessary. Here, the fact that the patient was draining fluid from the ear shows that this type of auto decompression is all that is necessary at times to tide the patient over.

In a number of the cases, some men may feel that operation has been undertaken where more conservative treatment may have been sufficient.

That is probably true, but the treatment has been carried out with the idea of not only saving life but also of preventing post-operative neurosis. The writer feels that the various types of neurosis are due to not only laceration of tissue, but to a permanent derangement in the circulation of the cerebrospinal fluid where absorption is not as rapid as secretion. This he feels is due to a type of chronic arachnoiditis and organization of connective tissue around the pacchionian bodies as well as around the supracortical veins, and which has a tendency to produce the so-called chronic cerebral edema. Rawlings, in a careful review of late war injuries to the head, has recommended decompression in many of these cases with good results. As will be noted on looking over the case records, the writer also combines decompression with lumbar puncture. This is because of the fact that even though in the experimental animal pressure is transmitted equally in all directions, it is probably not so in the injured patient, since blood clot and debris evidently closes up the intercommunicating foramen leading through the falx or the tentorium, for oftentimes lumbar puncture may not reveal fluid under any increase of pressure while a decompression or lifting of a depressed bone will reveal a high grade of intracranial pressure on incising the dura. When lumbar puncture and operation are combined, the medullary and cortical areas are relieved so that a quicker and more favorable recovery results.

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THE GIBSON RUBBER DAM TAMPON IN ACUTE APPENDICITIS*

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A few generations ago acute fulminating cases of appendicitis were frequently considered to be the result of the administration of poisons, and efforts were confined to the giving of antidotes and search for the malefactors. With advancing knowledge such conditions were attributed to inflammation of the bowels and finally in 1886, through the efforts of Reginald Fitz, acute appendicitis was established as a definite clinical entity. During the next thirty years innumerable articles appeared on various phases of this subject and many vital modifications in the treatment have been offered. In this paper we wish to present a method of drainage useful in the most severe cases complicated by abscess formation and peritonitis, as taught to one of us (Dr. Webb) by Dr. C. L. Gibson, Professor of Surgery in Cornell University Medical School.

Drainage in appendicitis is and ever will be a mooted question, but there are certain essential points to be remembered. Drainage of the general peritoneal cavity cannot be maintained more than forty-eight hours. In a very few hours the drain is surrounded by fibrinous adhesions which wall off infected areas not in contact with the drain, which, consequently, acts chiefly as a protective pack. It is therefore essential that the whole septic area be drained. In order to absorb rapidly the drain must be loose and should have exit through as large an orifice as possible. When the drain ceases to discharge it should be loosened or wholly withdrawn and replaced if indicated.

In order to accomplish a maximum amount of drainage in cases with large abscesses it was customary some years ago to pack the involved area with large amounts of gauze. The gauze so packed becomes very adherent to the viscera and the removal often required the administration of an anesthetic. In addition the strands of gauze may become involved among the loops of bowel in such a way as to produce obstruction at the time or upon

removal of the gauze. This method of drainage served to produce a maximum drainage of the whole septic area, however, and was otherwise satisfactory.

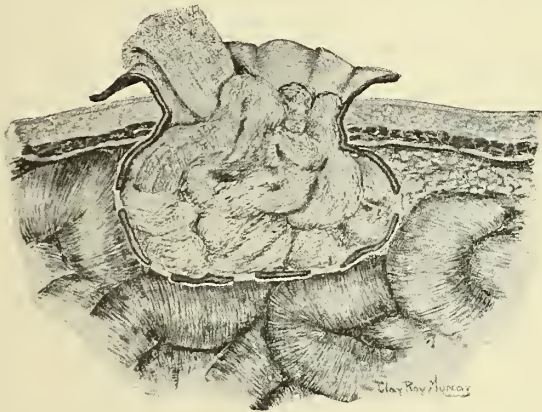
Cigarette drains are used to accomplish this same result, but owing to the fact that they are of equal calibre throughout their length it requires a very large wound tightly packed in order to properly fill the abscess cavity. In addition it is difficult to replace them when once removed. Owing to the fact that they are tightly rolled in a waterproof covering, capillary action ceases as soon as they are saturated, and when removed from a pus cavity they are invariably followed by a gush of pus giving rise to the term "cigarette corks" rather than drains.

Mikulicz of Vienna, who has drawn special attention to the natural barriers in the abdomen, which tend to limit and also to determine the spread of infectious material, devised a tampon prepared as follows. It consists of a square of gauze to the center of which a stout piece of silk is fastened. This is packed in the cavity with the center at the deepest point, forming, as it were, a capsule into which the necessary gauze wicks are packed, the free end of the silk being conducted outward through the middle of the packing. The gauze wicks are withdrawn in from five to seven days, followed finally by the enveloping pouch of gauze which is turned inside out by means of the silk cord. Although very efficacious this drain has obvious disadvantages.

Gibson modified the Mikulicz tampon in the following manner. A square of rubber dam, twenty by twenty inches in size, is folded two or three times in the form of a cornucopia. The apex, which will eventually be the lowest point of this dam, is snipped off, making a hole the size of the little finger. An inch and a half above this the edges of the cornucopia are cut out, making a perforation about one-half inch in diameter, and a second and third row of perforations is made higher up about one inch apart. The tampon is then introduced as follows: After the appendix has been removed and the cavity sponged out, the operator carries the tampon into the cavity, the index finger being placed at its apex. The pads and retractors may still be in place. The edges of the rubber dam are spread out and while the operator still keeps his finger on the apex, the tampon is filled with strips of packing. The cavity is usually overstuffed

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in order to push the gut and omentum well away from the incision in the abdominal wall. As a rule it is not necessary to place any sutures in the wound. A large loose wet dressing is applied. At the end of twenty-four hours the outer dressing is removed, the edges of the rubber dam are loosened around the wound and the gauze packing is partially withdrawn in order to allow better drainage. This process is repeated each day, removing a greater amount of gauze each day and it is all removed by the fourth or fifth day and the tampon is also removed or it is left in place and a small amount of fresh gauze is reintroduced. It is preferable to remove the entire rubber dam at this time and replace it with folded rubber dam drainage, the amount depending on the size of the cavity. At this period one of the principal advan-



Schematic drawing of Gibson rubber dam tampon illustrating the packing away from the wound of the intestines and omentum and the free drainage of the layers of the abdominal wall (Gibson Ann. Surg.).

tages of using the tampon will have been obtained; namely, the permanent pushing back of the abdominal contents from the wound cavity, and there is now left a well defined, walled off cavity which can be drained with great ease. There is no longer need for wide open drainage and the small rubber dam drains will suffice. As the wound closes, the abdominal walls come together over the abdominal contents, which, inasmuch as they were held back at the outset, will not intrude into the wound as a wedge driving the edges apart.

In a review of 818 cases of acute appendicitis operated upon on Dr. Gibson's service at the New York Hospital, C. E. Farr found that 162, or 20 per cent, which were the most serious cases, were closed with the rubber dam tampon. The mortality in the entire series was 4.15 per cent. In

those cases in which the rubber dam tampon was used the mortality was 12.3 per cent. When one considers that the entire series is taken from a charity service which draws largely from the many ignorant foreigners which make up a large proportion of the population of the east and west side in New York the mortality of the series treated with the tampon is not to be considered high. Average stay in hospital was 22.4 days. Follow-up records were obtained in 120 cases in which the tampon was used, and hernias occurred in twenty-one, or 17.5 per cent.

In order to illustrate the type of case in which the tampon may be used and to show the progress under this treatment we wish to present the following cases so treated in the past year. We wish to thank Dr. Strachauer for permission to report the two cases operated upon on his service at the University Hospital.

CASE 1. Mrs. E., housewife, aged 59, referred by Dr. F. W. Wittich, admitted to St. Mary's Hospital Nov. 13, 1922, acutely ill with abdominal distress. She was a Christian Scientist. She apparently had severe abdominal cramps but had accepted medical attention only at her husband's request and did not co-operate well.

Family history unimportant and past history has no bearing on the present illness.

Present illness began at about 2 A.M. on the preceding day with abdominal cramps followed by vomiting about twelve hours later. Fever was present and she appeared to the relatives to be very ill. She continued to grow worse that night and the next day, and she finally yielded to her husband's request and permitted medical attention about forty hours after onset. Following her illness she stated that she did not recall her trip to the hospital. When taken to the hospital she had not voided for twenty-four hours and a very small amount was obtained on catheterization.

Physical examination. Fairly well developed woman of small stature appearing extremely ill. Mouth, lips and teeth dry and covered with sordes. Tongue is heavily coated. Abdomen slightly distended, respiratory movements present but limited markedly. There is marked tenderness and rigidity in the entire right lower quadrant which shades off at the borders into the other quadrants. Pelvic examination revealed tenderness high up on the right side. Temperature 103, pulse 120, respirations 35. W.b.c. 19,900. Urine normal.

Operation, by Dr. Webb, forty-four hours after onset; gas and ether anesthesia. Lower right rectus incision revealed free turbid fluid on opening the peritoneum. The omentum was present and was apparently attempting to wall off a foul smelling accumulation of pus which was present in the region of the appendix. The intestines were distended and inflamed presenting evidence of a general peritonitis. The appendix was black in its distal two-thirds

and was perforated. It was ligated and removed without inversion of the stump. Split rubber tubes were placed down to the pelvis, a folded rubber dam was placed in the lateral gutter, and a Gibson tampon was inserted. Two through-and-through silkworm gut sutures were placed above and below the tampon to temporarily decrease the size of the wound. A large loose warm saline dressing was placed over the wound.

Post-operative course. The usual post-operative treatment consisting of morphine, forced fluids, Fowler's position, etc., was carried out. Tubes were removed in forty-eight hours. On the fourth day she developed broncho-pneumonia involving the greater portion of the right lung and a part of the left lung. This complication was treated by Dr. Wittich. Oxygen inhalations were necessary in addition to other forms of medication to keep her alive over a period of five days and the lungs were entirely clear on fourteenth day after onset. The abdomen on the third day was soft throughout and there was very little distention. The gauze packing in the tampon was removed partially each day and on the fourth day it was entirely removed and repacked with fresh gauze. On the tenth day all drains were removed and a folded rubber dam drain inserted. On the twenty-first post-operative day all drains were removed and a Carrel tube was laid in the wound superficially for the injection of Dakin's solution and the edges were strapped together. The patient was taken home on a stretcher for Christmas celebration six weeks after onset of her illness. Her wound was nearly healed but she was in an extremely weakened condition due to the combination of acute appendicitis, general peritonitis and broncho-pneumonia. She was up and about, however, at the end of eight weeks. There was a firm wound when last seen.

CASE 2. C. L., female, married, aged 28, housewife, admitted to the University Hospital May 19, 1923, at 6:30 P.M. complaining of severe abdominal pain.

Family history unimportant.

Past history. During the previous fourteen months she had had five attacks of abdominal pain similar to the present one, each of which had kept her in bed from four to seven days. She was four and one-half months pregnant on admission. Past history otherwise unimportant.

Present illness, began at 2 P.M. May 17, 1923, with sudden severe cramp-like pains over the abdomen followed by nausea and vomiting. The following morning the pain became localized in the appendix region. She remained at home thinking that this attack would pass away in the manner of the previous attacks. The greatest relief was obtained from lying on the right side with the knees flexed. In the forenoon of the second day she called a physician who diagnosed appendicitis and referred her to the University Hospital.

Physical examination revealed a fairly well nourished woman of rather slight build lying in bed severely ill. There was no distention or retraction of the abdominal walls. The entire abdomen was held tense and the rigidity was board-like throughout. Rectal examination revealed an enlarged uterus but was otherwise negative. Physical findings otherwise negative.

Temperature 99.6 F. Pulse 120. Respirations 24. Blood examination, w.b.c. 13,700, p.m.n. 93 per cent. Urinalysis, normal.

Operation performed by Dr. Webb fifty-four hours after onset (ether anesthesia). Right rectus incision four inches long. There was considerable thin free pus with evidence of a general peritonitis on all visible intestinal walls. The intestines were packed away and the appendix exposed. The pus in the region of the appendix had a foul odor but there was little evidence of walling off. The appendix was gangrenous and perforated. Appendix was ligated at its base and removed. Tubular rubber dam drains were inserted to the pelvis and the lateral gutter and a Gibson rubber dam tampon inserted in the wound. A continuous suture was placed in the peritoneum for a short distance from either end. No other sutures were placed in the wound.

Post-operative course. Patient appeared to have considerable trouble from gas distention but otherwise her condition improved daily. On the fourth day she aborted. Condition was unaffected by the abortion. Temperature reached normal on the eighth post-operative day. The packing in the tampon was removed about one-fourth at a time and was entirely removed and fresh packing replaced on the fifth day. The rubber dam drains were gradually removed and all drains were out on the twelfth day. On the twenty-first post-operative day the wound appeared clean and healthy and was nearly closed. She was discharged cured on the thirty-sixth post-operative day with wound entirely healed.

On discharge the wound appeared to be firm.

CASE 3. D. D., male, aged 12, admitted to the University Hospital at 3 P.M. June 26, 1923, complaining of severe abdominal pain.

Family history and past history unimportant.

Present illness began in the morning of June 24, 1923, two and one-half days before admission with general abdominal pains which increased in severity. Nausea and vomiting soon followed and in the afternoon the pains were localized in the right lower quadrant. A cathartic was given that evening. His condition steadily grew worse and at the end of forty-eight hours a physician was called who diagnosed appendicitis and advised operation.

Physical examination revealed a well developed and well nourished boy lying in bed acutely ill. The face was pale and the tongue was dry and coated. Physical examination was otherwise negative with the exception of the abdominal findings. There was generalized rigidity of the abdomen with tenderness over the entire lower abdomen, most marked in the right lower quadrant. The psoas sign was positive. Rectal examination revealed tenderness high up on the right side.

Temperature 100.8 F. Pulse 100. Respirations 20. Blood examination w.b.c. 29,000 with 78 per cent p.m.n. Hb. 82 per cent. Urine normal.

Operation performed by Dr. MacFarlane sixty hours after onset (ether anesthesia). Low right rectus incision. There was about 200 c.c. of foul smelling thin pus aspirated from the abdominal cavity. There was practically no walling off of the inflamed area. The intestines were packed away

from the appendix area. The appendix was acutely inflamed throughout its length and was gangrenous at the tip and ruptured. The appendix was ligated and removed. Tubular rubber dam drains containing a gauze wick were inserted to the pelvis, the right kidney pouch and the lateral gutter. A Gibson rubber dam tampon was inserted and packed with gauze as described above. No sutures placed in the wound.

Post-operative care consisted of Fowler's position, fluids averaging 3,000 c.c. per day by enteroclysis and hypodermoclysis. The pulse and temperature reached normal on the fifteenth day. The packing in the Gibson drain was removed about one-fourth at a time until the fourth day, when it was all removed and replaced by fresh gauze. The purulent discharge was profuse until the eighth day. The drains were decreased in length and size daily. The tubular rubber dam drains were removed on the eleventh post-operative day and the large rubber dam drain was removed on the fifteenth post-operative day and the wound was strapped with adhesive. On the nineteenth day there was very slight discharge and the wound was clean and rapidly granulating. There was no sign of wound infection at any time and there was no sloughing of fascia.

CASE 4. L. D., male, aged 13, referred by Drs. Huencens and Moriarty, admitted to St. Mary's Hospital Aug. 24, 1923, at 4 P.M. complaining of abdominal pain. Family history and past history have no bearing on the present condition. Present illness began at 4 P.M. Aug. 23, when he awakened with general abdominal pain. He became nauseated and vomited at 5 A.M. and several times that morning. He was in Duluth at the time and at 8:30 A.M. left for Minneapolis by automobile. He vomited several times on the way but was otherwise unaffected until 2 P.M. when in order to avoid a collision the automobile was driven down an embankment where it turned over. Immediately following this accident his pain became worse and he was unable to sit up. The trip was completed by train. In the evening he was given a teaspoonful of aromatic cascara. The pain grew worse that night and he vomited frequently and cried with pain. His condition grew worse and the next afternoon he was taken to the pediatrician who diagnosed acute appendicitis.

Physical examination revealed a well developed boy of thirteen years who appeared seriously ill. Findings were normal with the exception of the abdomen. There was no distention or bulging but the respiratory movements were limited. There was marked rigidity of the entire right side most marked in the right lower quadrant and extending across the mid-line to the left side, suggesting a general peritonitis. Rectal examination negative.

Temperature 100 F. Pulse 90 per minute. Respirations 20 per minute. Blood examination w.b.c. 16,000. Urine normal.

Operation, by Dr. Webb, thirty-six hours after onset (ether anesthesia). McBurney incision 3 inches long. Slightly turbid free fluid encountered. There was an abscess containing about 250 c.c. of foul smelling pus located between the cecum and the lateral wall at the brim of the true pelvis with very slight attempt at "walling off." The appendix lay at the bottom of the abscess. It was gangrenous in its middle third and ruptured. The con-

tents of the abscess were evacuated and the base of the appendix ligated and the appendix removed. No inversion of the stump. A tubular rubber dam drain containing a gauze wick was placed in the lateral gutter and another similar drain was placed in the pelvis. A split rubber tube drain was also placed in the pelvis. A Gibson rubber dam tampon was then placed in the wound as described above. Three twenty-four inch strips of gauze packing two inches wide were placed in the Gibson drain, in such a manner that the wound opening was entirely filled. No sutures were placed in the wound. A large warm saline dressing was placed over the wound.

Post-operative treatment. Fifteen hundred c.c. of tap water per rectum before coming out of anesthesia and an average of 3,500 c.c. of fluid per day thereafter. Fowler's position. Temperature ranged as high as 103 and pulse 128. Temperature and pulse rate normal on fifteenth day. Details of wound treatment were as follows: All drains were shortened daily and at the end of sixty hours the split rubber tube to the pelvis was removed and one gauze pack was entirely removed from the Gibson drain. At the end of eighty hours all gauze was removed from the Gibson drain and a smaller amount of gauze was replaced to keep the wound and the rubber pouch within slightly distended. On the sixth day all drains were removed, and the wound irrigated with saline. The cavity beneath the abdominal wall was about the size of a lemon and loops of bowel could be seen forming its walls. The large piece of rubber dam was replaced in the cavity. Each succeeding day the drain was decreased in size, wound irrigated and drain replaced. On the sixteenth day all drains were removed and the wound edges strapped over a catheter which was placed in the wound superficially for the injection of Dakin's solution at four hour intervals. On the nineteenth day the catheter was removed and the edges strapped tightly. He was up in a chair on the twenty-fourth day and on the twenty-eighth day was walking about. At this time the wound when unstrapped was one and one-third inches long, one-half inch deep and the superficial edges were one-fourth inch apart at the widest point. At no time during the wound healing was there any bulging of loops of intestine in the wound or near the edge. The wound was not infected and there was no sloughing of fascia. The wound was entirely closed on September 28, five weeks after operation, with the exception of a small granulating area. He has been in school for the past week.

CONCLUSIONS

The Gibson rubber dam tampon gives a maximum amount of drainage and is particularly valuable in the deep high retrocecal abscesses where other methods are deficient. It approaches as nearly as possible the wide open method of treatment of infected areas, which is a rational and accepted method in other parts of the body.

Owing to the fact that sutures are unnecessary in completing the operation valuable time is saved.

It is mercifully comfortable.

Properly applied it keeps the intestines and

omentum from the wound opening so that being kept at a distance the "inwards" do not act as a wedge driving the wound apart.

Because of the free drainage of the layers of the wound and the lack of sutures to produce shelves above and below each layer in which pus may gather, wound infection does not take place and there is no necrosis of fascia to delay healing.

One case in five requires subsequent repair on account of hernia but inasmuch as all the abdominal wall structures are preserved the repair is extremely easy.

There is nothing to prevent additional drainage of the pelvis, lateral gutter, etc., in conjunction with the Gibson drain.

We believe that the proper use of this drain will lower the mortality which occurs in neglected cases of appendicitis.

The possible occurrence of hernia is not to be considered.

The "follow-up" records in these cases show almost no post-operative complaints.

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FEEBLE-MINDEDNESS*

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Feeble-mindedness is one of the leading problems which claims the attention of all branches of social science today. With the passing of the old notion that political equality signifies intellectual equality in our democratic society, we have come to realize that many types of social failures are caused by mental incapacity or inability instead of by unwillingness to conform to the current social standards. Our courts and penal and corrective institutions are rapidly adjusting legal and personal responsibility to individual mental capacity.

*Read before the Southern Minnesota Medical Association at its summer meeting in Faribault, Minnesota, June 11, 1923.

The scientific study of the feeble-minded is only about fifteen years old, and the last few of these have witnessed an astonishing increase of popular and scientific interest in this subject. This interest has developed so suddenly and has become so widespread that the increase of knowledge and the establishment of methods, criteria and terminology have not kept pace with the new developments. Consequently there is considerable difference of opinion as to what feeble-mindedness is, and especially as to who may be properly included under this term. Considerable of the confusion now prevailing in the different conceptions of feeble-mindedness is caused by failure to discriminate between superficial manifestations and fundamental basis. This is due to the fact that the condition of mental defect has been defined from four, or more, different points of view, and the definitions thus compounded have been construed to better define the subject from the viewpoint of that particular branch of science.

No matter from which angle we view this subject the fact is still very evident that *feeble-mindedness is a condition of the arrest of mental development*. However, for our convenience we will use the definition of Dr. H. H. Goddard, whereby he defines feeble-mindedness as a "*state of mental defect existing from birth or from an early age, and due to incomplete or abnormal development, in consequence of which the person affected is incapable of performing his duties as a member of society in the position of life to which he is born.*"

INCIDENCE

The enumeration of the mentally deficient population of any country is an extremely difficult matter, and there can be no doubt that most official inquiries, particularly those by means of the ordinary census, fall very short of telling the truth. The reasons for this are very numerous and obvious.

The investigations of the English Royal Commission in 1904 showed that of the population of England and Wales, one in 248 were feeble-minded. It is probable that we have quite as many in America. For the most part they are living in the families to which they belong. Some of the states have not provided institutions for their care, and in none is there provision for more than a small percentage of the total number. Dr. Fernald says, "There are at least 200,000 pronouncedly feeble-minded persons in the United States. Of these, about 40,000

were being cared for in institutions, on January 1, 1920.

According to Dr. Pearse Bailey, the psychological examination of recruits which was made during the great war shows that the incidence of feeble-mindedness among the drafted men into the army was as high as six per thousand and he considers that even this is probably below the rate of incidence in the population generally.

CLASSIFICATION

Persons who are recognized as being below the line of normal intelligence have been at different periods called by different names. Originally called idiots, they were later designated as imbeciles, and still later as feeble-minded. But since more study has been put upon the problem it has become necessary to designate different degrees of defect, and by common consent the custom has grown up of applying the term idiot, to the lowest grade, imbecile, to the middle grade, and feeble-minded, to the highest. In England this is the common classification. In America we have used the expression feeble-minded both in a specific and in a generic sense; specifically, to designate the highest division, and generically, the whole group. Our institutions for these defectives are generally known as Institutions for the Feeble-Minded.

Since the introduction of the Binet Measuring Scale of Intelligence and the grading of these children by their mental age, a closer classification has been followed. The American Association for the Study of the Feeble-Minded has adopted the following scheme: The term idiot is used to designate those of mental age up to and including two years; imbecile, those from three to seven years inclusive; for those from seven to twelve years a new term has been coined—they are now called morons. The term moron, therefore, in America designates almost exactly what is meant by "feeble-minded" in England. This classification has been almost universally adopted and is a great step forward in the study of this problem. It answers almost every purpose from the sociological and psychological viewpoint. But owing to the fact that it does not take into consideration any of the physical abnormalities, it does not meet all the requirements of the medical and institutional people. So, from usage, we have about arrived at the point where we are combining this classification with the one that is more descriptive of the physical condition.

It is along this line of the combined classification that I have tried to arrange this little clinic to show you cases illustrating the different types, which we shall discuss briefly as we go over them.

The first group to which I wish to call your attention is the moron. This constitutes the largest and most important division and in this group the sexes are equally divided. The higher members of this group are but little removed from the general populace and would pass muster as normal if our diagnosis rested upon inspection only.

The great majority appear to be practically normal physically; nevertheless, Dr. Lapage found that over 90 per cent showed some of the so-called stigmata of degeneracy and that these defects were usually in combination, while about 24 per cent were triple. (Tredgold.)

We can get an approximate idea of this group if we will recall the normal child of from eight to twelve years of age, to which, of course, we must add the physical growth and especially sex development, which react upon them to produce certain characteristics not found in the normal person of the same mental age.

The typical moron is usually up to the average in ordinary matters of a concrete character. He expresses himself well, but fails in adjusting himself to any complex environment in which logical reasoning is required. He has no thought of the future or of anything beyond the immediate consequences of his acts, yields easily to sex temptations, and is usually improvident and drifts into pauperism. His attention is transitory, his memory poor. As a class they are imitators, are readily amused by anything ridiculous and are easily touched by anything pathetic. They constitute a very fertile field from which we harvest many of our petty criminals, prostitutes and minor offenders.

The boy that I have selected to represent this group is slightly sensitive regarding his condition, so I will not call him in until I have enumerated a few of his defects. Upon inspection he appears normal in every way, yet is a very low-grade moron, hardly qualifying as a moron.

His intelligence quotient is .49. He is twenty-one years old, and small of stature; he walked and talked at fourteen months and dentition occurred at about the same age. When he was three months old he was sick; he had several convulsions (although he is not an epileptic) and this is the at-

tributed cause of his condition. His trouble was not noticed until he started school, where he attracted attention by his inability to learn, although he was finally promoted to the fourth grade.

Physical examination is negative; Wassermann negative. He is left-handed and at times masturbates. He is an awful liar, excitable, restless, obstinate, bossy and very important; a fairly good worker under close supervision. Handicapped by his low mentality, this boy was successful in purchasing a high-priced automobile without having any funds to pay for same.

The next group that we will consider is that of the imbecile, with mental ages from three to seven inclusive. This class is about one-half as numerous as the moron. These children can understand language, especially that pertaining to their daily life. There is also memory of parents and some incidents of home life. They may be active or apathetic and often show a great deal of obstinacy. Sensation, self-preservation, perception, instincts and emotions are present, but fear is frequently not shown.

They can do some industrial work, under supervision, where the procedure is fixed and no judgment required.

In this class physical defects are more marked and we find numerous abnormalities. Occasionally giantism is seen, but as a rule the stature is several inches less than that of a normal person. In addition to that, the body is ill-formed, its balance and carriage are ungainly and stigmata of degeneracy are numerous and prominent. Various degrees of paralysis occur in a certain proportion of cases and probably about 40 per cent of all imbeciles suffer from epilepsy. (Tredgold.)

The expression of the imbecile is usually, in itself, sufficiently striking to attract attention. In this class there is a slight preponderance in the male sex. (959 males—843 females, Tredgold.)

To illustrate this group, we have chosen two boys. The first, E. J. D., was born March 31, 1904, and appeared normal until six and one-half years old, when he was injured by striking his head on the pavement. From that time on his present condition was manifest.

This boy is now past nineteen years old, yet his mental age is 4-6, giving him an I. Q. of .30, which classifies him as a low grade imbecile.

His family and personal histories are negative; Wassermann negative.

Physical examination shows nothing but a good-looking, well-nourished boy, that is inclined to be excitable, restless, and irritable, but easily managed. He does not present any of the usual stigmata of degeneracy and he handles himself much more gracefully than most imbeciles. He is able to do some work under supervision. He is not an epileptic.

This other boy, A. W., is also well developed and well nourished. He has a funnel-shaped breast and a high-arched palate. He is not an epileptic but has a vicious temper. Personal history is negative. Family history shows that his mother was insane and that he has two brothers that are feeble-minded. His condition has been noticeable since birth. This boy was born in 1899, which gives a chronological age of 24 years. His mental age is 4-4, making his I. Q. .29.

IDIOTCY

In this third classification we have the lowest degree of defect, with a mental age of from three years old to zero.

In Great Britain, the idiot is legally defined in the mental deficiency act of 1913 as: "A person so deeply defective in mind from birth or from an early age as to be unable to guard himself against common physical dangers." (Tredgold.)

This class is about one-third as numerous as the imbeciles, and with regard to sex is nearly equal, with the males very slightly predominating. (Tredgold.)

The various anatomical and physiological anomalies reach their maximum in the idiots. Some are grotesque, but the majority are such stunted, misshapen, hideous specimens, that they arouse feelings of repulsion, rather than of levity. Paresis and paralysis, with localized atrophies, are often present. Epilepsy is very frequent and occurs in about 56 per cent of cases. (Tredgold.) Most idiots are sterile but this is not always the case. (Tredgold.) They may be able to walk, and are often active. They are all dirty in their habits and occasionally rumination is seen.

They have no memory, perception or volition, and attention is almost entirely absent. Sensation may be present but is usually absent or very dull; thus we find them impervious to sounds, sights, tastes or odors. They learn nothing from experience. They occasionally learn to vocalize, but never learn to talk. Movement is often abnormal in qual-

ity and quantity and as a class they are universally prone to disease (especially tuberculosis) and to early death.

As an example of this class (idiots), this boy, A. E., is a very good example.

Here we see nothing particularly abnormal in looks, except that blank expression. He has not many of the stigmata of degeneracy, the high-arched palate being the most pronounced.

This boy's mother was insane, and he has two brothers who are idiots. His condition has been noticeable since he was two years old.

He is thirteen years old, yet his mental age is so low he could not be tested, leaving him in the class of absolute idiots. He is not an epileptic.

The cases already shown illustrate the groups in the generally accepted classification, and it is probable that a large percentage of all defectives belong to the primary group. The majority of these, as already mentioned, present no special distinguishing features, beyond the anatomical, physiological and psychological anomalies common to this class in general.

A small proportion, however, present such special characteristics as to form distinct clinical types, and it is in these cases that we must combine the two classifications.

The first group we shall consider will be the microcephalics.

By this term we usually mean a person whose skull is less than 17 inches in its greatest circumference. But I am of the opinion that the criterion should be one of shape, rather than size, and if we use this standard these cases would constitute about 5 to 6 per cent of all defectives.

The cause of this condition has attracted much attention, particularly from anatomists, some claiming it to be due to a premature closure of the cranial sutures, and others that it is due to a synostosis of the cranium. Tredgold thinks it is neither, but is the result of an inherited blight.

The two chief clinical distinguishing features of these cases are the peculiar configuration of the skull and the (usually) very small stature. In consequence of the diminished surface of bone to be covered, the scalp is nearly always extraordinarily thick and redundant and in some cases is permanently thrown into a series of deep furrows, running anteroposteriorly. The hair is usually coarse and wiry.

The second characteristic, that of diminished stature, is not so marked, but many of them are called dwarfs.

The intellectual capacity of these persons varies within considerable limits. The majority are idiots; some belong to the imbecile class. The mental features common to most of them are the absence of any sensory defect, a general vivacity, restlessness and muscular activity, a considerable capacity for imitation, and an inability for sustained effort. They usually have remarkably good hearing and sight, and are extremely quick in powers of observation. In disposition, the majority are affectionate and well-behaved. About one-half of them are subject to epilepsy. Under this heading, we have several remarkable cases to show you.

The first case is that of a girl, M. M., born September 19, 1909, now being thirteen and a half years old. Her mental age is 2-6, making her I. Q. .18, which places her in the idiot class.

This girl's father is a degenerate, and he is also the father of this patient's mother.

Personal history is negative and physical examination reveals a decided cardiac murmur, systolic in time. Her scalp is not fissured. The circumference of her head is 16 inches. She is not an epileptic. Up to the present time she has never menstruated.

The next two cases we will consider together as they are brother and sister. We have no data on the family.

Their personal history is negative, and their Wassermanns are negative. As in all of these cases the condition was present at birth.

The boy, W. B., the older, was born February 9, 1914, making him nine years and four months old. He is not an epileptic.

The girl, A. B., was born February 12, 1916, making her age seven years and two months. They are both idiots with a mental age of much less than three years.

They present no physical abnormalities. Their bodies are well developed. They are very active.

The circumference of the boy's head is 15.25 inches, and the girl's is a great deal smaller, measuring 13.75 inches—the smallest head we have at present, in our institution. She is not an epileptic.

The outstanding point of interest in the next cases lies in the fact that they are twin sisters, the first children born to a very strong and active, but unintelligent father and mother. The father was twenty-five years of age, the mother nineteen, at their birth, which was at full term and an ordinary labor. Each baby weighed 4 pounds; both were artificially fed; their condition was present at birth—small head and features and undersized.

Dentition occurred at about one year; they walked at one and one-half years, and talked at about four years.

They have two brothers and three sisters living and well. None are dead. They are both right handed, very active, but clumsy. They are not epileptics; the Wassermanns of both are negative.

They are now nineteen years nine months old (Sept. 7, 1903), and both are idiots with a mental age of less than three years. Bodies normal but small. The circumference of the older twin's (E. A.) head is 14.25 inches, and that of the second born (M. A.) is 14.5 inches in circumference. E. is a very little brighter than the other. Menstruation is now established in both girls.

In contrast with the cases we have just seen we shall now consider the unfortunate group known as hydrocephalics.

Hydrocephalus is an excessive accumulation of the cerebrospinal fluid, in the ventricles, or in the pia mater or both, characterized by enlargement of the head and more or less pronounced nervous phenomena. Much uncertainty still exists as to the cause, but syphilis and tuberculosis seem to play an important part. The peculiar enlargement of the skull makes diagnosis easy, it being uniformly increased in all directions and tending to assume a globular shape. The greatest circumference is at a level of the temples and varies from a little above normal to about 30 inches. The forehead is high and protruding. The fontanelle is tense and the sutures often widely separated. The scalp is thin and often marked by large and prominent veins. Impairment of sight and hearing is very common. Strabismus is frequent. Epileptic convulsions are usually present in the acute stage, but tend to diminish and often disappear as the case becomes chronic or arrested. Most patients are undersized. As a rule they are quiet, confiding, affectionate, obedient and willing, although paresis or muscular weakness may prevent them from doing what they wish.

We have three very good examples of this condition:

The first is a boy, C. B., born September 25, 1902; full term; ordinary delivery; first born; weighed 11 pounds; was breast fed and was a strong baby.

Father and mother were both thirty-two years old at the time of his birth. Mother died of heart disease at age of forty-six.

Has four brothers living and well and two full term children were born dead.

This boy talked at fourteen months and walked at sixteen. When six years old he had meningitis.

This boy's head is 26 inches in circumference. The fontanelles and sutures are closed.

He is not an epileptic. He is now twenty years and nine months old and his mental age is 6-10, making his I. Q. 45.

This case, a girl, M. E. D., was born June 2, 1917.

Enlargement of the head in this case was not noted until she was two months old, but at the age of one year her head measured 22.5 inches. Dentition took place at nine months. Family history is unknown.

At the present time she is six years old and her mental age is less than three.

Her head now measures 26 inches in circumference and the fontanelles and sutures are open. Her eyeballs are characteristic.

She is a very good example of a hydrocephalic idiot, and is not an epileptic.

Here we have another good example of the same condition, a girl, C. T.

Born May 1, 1915; full term; ordinary labor; was first baby; weighed eight pounds; was breast fed and was a strong baby although her condition was noticeable at birth.

She has one brother well and healthy. Mother died at age of twenty-four years, of influenza. This girl is right handed; reflexes are diminished; she is partly paralyzed on the left side; she has a decided mitral systolic blowing murmur.

She began to talk when two years old. At present she is eight years old and her mental age is two years and ten months.

The circumference of her head is 25.5 inches. The fontanelles and sutures have recently closed, showing that the pressure has subsided and would now be called an arrested case, although the damage is done. She is not an epileptic.

In conjunction with the last two groups, I wish to call your attention to this boy, who is not a microcephalic nor a hydrocephalic, but due to the contour of the skull might easily be mistaken for either, if seen alone. This is the decidedly rare condition known as oxycephaly (steeple head, tower skull) and is probably an after-effect of meningitis, brought about by premature union of the frontal and coronal sutures.

The particular characteristics are the skull and eyes, the skull rising high in the frontal region to a sharp point at the vertex. The palpebral fissures slant downwards and outwards and there is marked exophthalmos. Vision is usually impaired, due to optic atrophy; severe headaches are usually present.

This boy, L. M., was the fourth child in the family; born at full term; ordinary labor; weight, 9 pounds. Bottle fed and suffered from malnutrition. Father aged 34, mother 25, at time of his birth. One brother and two sisters are well and healthy. Mother died of appendicitis.

Walked and talked at two years; is left handed; is very striking example of web fingers and toes. He is now thirteen years and seven months old. His mental age is 5-6, giving I. Q. of 40, an imbecile. Not epileptic.

The next group, namely, the mongolian, is one that should be discussed at length, because of the apparent increase in the number of cases coming under this heading. But time does not permit.

This is one of the most clearly defined and best known groups of defectives, and is so called from a more or less close resemblance to the Asiatic type

of countenance,—the slanting eyes and round face. This group constitutes about 5 per cent of defectives in adults and a still larger proportion in children.

The cause of this condition is still shrouded in obscurity, but recent investigators have suggested that it is due to the abnormal functioning of the glands of internal secretion. It is generally agreed that the condition is due to something that interferes with prenatal development. As a rule there is only one defective in the family where mongolians occur, and they generally come from the better class of people. They are often the last born in large families.

The chief characteristics of this group are the slanting eyes, round face, short stubby fingers, rough skin, poor circulation, a decided lack of occipital protuberance and the large thickened tongue with hypertrophied papillæ and irregular, transverse fissures. The hair is dry, scanty and wiry. Cerebral complications, paralysis and epilepsy are exceedingly rare in this group. As a rule, mongols die early. They are rarely met with above the age of thirty years and the average age at death is about fourteen years. The chief cause of death is tuberculosis.

It is a remarkable fact that the mentality of the mongolians is almost always about that of a child four years old. (Goddard.)

These cases are oftentimes wrongly diagnosed as cretins.

In order to demonstrate the leading characteristics of this group, we have had to select a number of cases, owing to the fact that no one patient has all of the many stigmata that belong to this classification.

This first boy, Wm. J. M., was born at full term; ordinary labor; weighed six pounds; was third child born to parents twenty-eight years old; was breast fed; and as a baby was weak and slept all the time. He has always had some blephoritis.

Head and body were always small; dentition occurred at two years of age. Walked at three; talked at four. He is right handed and has the general faults of most mongolians: restless, noisy, destructive, and filthy.

His memory is very poor. He is not an epileptic. Three brothers are living, all well and healthy. His chronological age is 12-5 and his mental age less than three.

This boy, H. J., was born January 25, 1904, at full term, after a protracted labor (no forceps), and was the fourth and last child born to a father fifty years old and a mother forty-three.

Breast fed and weak from birth, he walked at three

years; he is excitable, noisy and is an imitator. He is right handed. Not an epileptic.

Family and personal histories, negative. This boy has the average shaped head, and the rough skin. He is a good example of the fissured tongue.

Nineteen years and four months old, with a mental age of 2-10 and an I. Q. of .19.

This next boy, J. H. N., walked when two and one-half years old.

Family and personal histories are negative. Has one sister well and healthy. This boy's chief characteristic is the rough skin, especially noticeable on his hands.

He is not an epileptic. He was born November 1, 1903, which makes him nineteen and a half years old, and his mental age is less than three years.

This girl, M. L. P., was born February 23, 1909, at full term; ordinary labor; weighed six pounds; was breast fed and has been peculiar since birth, with dwarfed body and small head.

She walked and talked at two and one-half years and dentition occurred at one year. She is the eighth and last child in the family. Father was forty-nine and mother forty-two years old at time of her birth. Her brothers and sisters are all living, well and healthy. Paternal grandmother was peculiar and disappeared. Otherwise family history is negative.

She is left handed. Has never menstruated and is not an epileptic. She has no power of observation and is apathetic. Although she is fourteen and one-fourth years old her mental age is 3-6 and the I. Q. is .25.

The predominating points of interest in this girl are the slanting eyes, the fissured tongue, and the marked distance between the toes.

This next case, E. G., was born March 11, 1909, at full term and with ordinary labor; weighed 8 pounds; and was breast fed. Her condition was noticeable at birth. Her father and mother were both forty-two years old at the time and she was the seventh and last child born.

She has one brother and three sisters living, all normal. Dentition took place at one year. She walked at three; talked at four years. She is obstinate, noisy and destructive, but not epileptic.

Her Wassermann is negative, reflexes exaggerated. She has a rough, coarse voice, and a fissured tongue.

She is 14 years and three months old and has a mental age of 3-4 with an I. Q. of .24.

This other case, a girl, J. S., was born May 28, 1916, at full term; ordinary labor, weighed 5.5 pounds and was the eleventh child, born when the father was forty-seven and the mother forty-three years old. Seven brothers and three sisters living and well.

Family history negative, with one exception. This girl's oldest sister married a first cousin and their first baby is feeble-minded.

As a baby she did not sit up until a year old. Teething took place at one and one-half years, and she walked when two and one-half years old. She has always been destructive, and of a rough and ugly disposition. She will also run away.

She is right handed. Reflexes are diminished. She usually allows her tongue to protrude. She shows a marked

separation of the toes. She is now seven years old and her mental age is less than three.

The next group we will consider are the cretins. It is now established beyond any doubt that cretinism is dependent upon an absence or diminished secretion of the thyroid gland. It is a condition of wide incidence, being found in every quarter of the globe, but most prevalent in Switzerland.

This condition is one that is noticeable in early childhood. They are usually fat and puffy and generally remain dwarfs. The skin is yellow, dry and thickened and wrinkled and has the appearance of being too large for the body.

The head is large and the fontanelles are late in closing. The nose is broad and flat, the lips are thick and swollen and the tongue so large that it often hangs out of the open mouth.

The belly is protuberant and the legs short and crooked, the whole body unwieldy, its balance unsteady, and its gait ungainly. The neck is short and thick and the supraclavicular fossæ contain cushions.

The hair is thin, coarse and dry; the nails are brittle, and the teeth poor. The genitals are poorly developed and puberty is delayed.

Their body temperature is low and they are more or less deaf. They are always apathetic, stupid, and lacking in memory and decision. They are not easily excited, but are sometimes vindictive.

They are usually heavy eaters, but very careless. Death is usually due to some intercurrent disease, but occasionally they live to be fifty years old.

I have several remarkable specimens to show you today.

This first case, M. B., is a very good example of the typical cretin, without any outstanding points of interest.

Here the thyroid is absent. Menstruation occurs irregularly. This girl was born November 10, 1893, making her almost thirty years old. Her mental age is 3-4, giving her an I. Q. of .23. (Dr. Dvorak.) She is not an epileptic.

This girl, C. F., was born December 13, 1897. Her father was Spanish (22 years old) and mother Norwegian (26 years old). Father and three brothers are living and well. Mother died at age of thirty-four of pulmonary tuberculosis. Mother had one first cousin that was feeble-minded.

This baby was the first born; at full term; ordinary labor; weighed 11 pounds. At birth she had six fingers on one hand (the supernumerary has been removed) and her condition has been noticeable since then. She is right handed.

Dentition occurred at age of three. She walked at seven and talked at nine years of age.

She has the dwarfed stature, prominent abdomen with

protruding umbilicus, large wrists and ankles and short thick neck, together with the dark, swarthy skin and black, straight hair.

This girl has never menstruated. Her powers of observation, attention and memory are very poor.

Her age is twenty-five and one-half years and her mental age is 4-6, making her I. Q. .30. She is not an epileptic.

This girl, J. J., was born June 18, 1885, the second child born. Father, aged 29, and mother, aged 23. She was born at full term; ordinary labor; was breast-fed. Family history negative (three brothers and two sisters living and well). Her condition began to be noticeable when eight months old.

She has the square head, wiry hair, thick tongue and the usual skin and posture of a cretin.

She menstruates regularly, but at times hemorrhages. This was stopped after a course of thyroids.

The most interesting thing in connection with this case is that she has developed epilepsy and this is a very rare condition in cretinism.

She is thirty-eight years old and her mental age is less than three.

The thing that I wish to call your attention to in this next case, H. L., is the marked deformity of the legs, showing an extreme case of knock-knees.

This girl was born June 27, 1889, at full term, delivery normal, the first born, when father was thirty-two and the mother twenty-two years of age. There were several feeble-minded children in the mother's family.

She has one sister living and healthy. She was breast fed and was very weak as a baby. She walked and talked at six years old.

She is left handed, dwarfed in stature, has the coarse, wiry hair and square head, the typical skin and the supraclavicular pads. She has never menstruated and is not an epileptic.

She is now thirty-four years old and her mental age is less than three.

These next two cases are of more than ordinary interest owing to the fact that they are sisters. The older girl, N. M. D., was born September 15, 1895, when the father was twenty-three and the mother twenty-five years old. The parents were second cousins. They had seven children, five were normal and these two were cretins.

Mother died, aged 41, of cerebral hemorrhage. This girl was the first born; full term, normal delivery, weighed 8 pounds; was breast fed for three months, then artificially fed. Dentition took place at six months, but she stopped growing when between one and two years old. She walked and talked at seven years.

She has the large head and dwarfed body, with knock-knees, and a geographic tongue. Another point in this case to which I wish to call your attention is the enlarged but deficient thyroid. She is twenty-eight years old with a mental age of 2-10 and an I. Q. of .19.

Her sister, F. D., was born almost ten years later, December 2, 1904. She was born at full term; ordinary delivery; was the fifth child; was breast fed for two months. Teething occurred at seven months and she walked and

talked at five years. She has about the same physical characteristics and her thyroid is palpable.

This girl is a little brighter than her sister. She is nineteen years old and has a mental age of 3-6, giving her an I. Q. of 23.

They both menstruate irregularly. Their Wassermanns are negative and neither are epileptics.

They are very much devoted to each other.

This next case is one of the most interesting we have. W. A., this boy, was born January 14, 1886, at full term, in ordinary labor, and was the sixth child.

He was breast fed and was a strong baby, although his condition has been noticeable since birth. His Wassermann is negative. He is right handed. He is 42 inches tall and weighs 60 pounds. He is thirty-seven years old with a mental age of 5-2, giving him an I. Q. of .34. Therefore he is the brightest child in this group. Thyroid extract has quite a marked effect upon this boy's mentality, as well as his physical condition. He is not an epileptic.

This case of cretinism illustrates a type of the disease that is very rare in this country, but is met with more frequently in Switzerland,—that is, the large stature.

This boy, C. E. H., was born December 12, 1899, and was the first baby born to parents forty-eight and twenty-nine years of age, respectively. The mother had chorea when she was eighteen years old and had one brother who was feeble-minded, while the maternal grandmother was insane at times.

This boy has one sister living, well and healthy. He was born at full term, by a difficult instrumental delivery and weighed 8 pounds. His present condition began to manifest itself when he was three months old. He was a strong, healthy baby.

He walked at five years; talked at ten years. He is 5 feet 1 inch tall and weighs 150 pounds. He is right handed, and clean in habits. He illustrates very nicely the big thick tongue; the coarse, wiry hair; the supraclavicular pads; the barrel chest; and especially the dry, scaly skin. He is now past twenty-three years old but his mental age is less than three years.

STROPHANTHUS KOMBE: AN EXPERIMENTAL AND CLINICAL STUDY* **

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St. Paul

The employment of strophanthus by the general practitioner has been discarded to a large extent and its use is confined principally to cases *in extremis*.

Our constant demand for a drug to increase the strength and duration of cardiac systole, raise blood

pressure and increase the tone of muscular tissue generally, leads us to the digitalis series, which includes digitalis, strophanthus, squills, Canadian hemp and lily of the valley. Disappointment in results has generally been due to variability of different commercial samples. The necessity for physiological standardization of this group has been amply established by numerous observers. Though digitalis itself has stood paramount in the treatment of circulatory diseases, strophanthus is the other member of this series that is of practical importance.

In our observations of this series, considerable work was done with digitalis and previously reported.¹ And in continuation, a study of strophanthus was begun to determine the potency and dosage of its various preparations.

I will not give, at this time, a detailed report of the entire experiment, but just mention a few important observations. Using the cat method of Hatcher as modified to our digitalis investigations,² securing continuous records with the string galvanometer, of cardio, respiratory, and blood pressure registration, it was found that strophanthus produces records practically identical with digitalis. Using the tincture of strophanthus (10 per cent) the toxic period developed at once, when only a scant percentage of the maximum lethal dose was injected; but by using a 2 per cent solution, an action similar to that found on using the 10 per cent solution of the tincture of digitalis was constantly observed clear through the lethal period. So with this smaller dosage as a guide, a clinical study was made using one-fifth regular dosages.

Our experimental work included the following derivatives of strophanthus:

Tincture Strophanthus Kombe. B. W. & Co.

Tincture Strophanthus hispidus. Department Pharmacy.

Tincture Strophanthus gratus. Department Pharmacy.

Solution Strophanthone (Kombe). P. D. & Co.

Solution Strophanthin (Kombe). B. W. & Co.

Solution Quabain (Arnold).

Solution Crystalline Ouabain.

As in the digitalis experiments,³ a so-called therapeutic stage exists up to about 30 per cent of the minimum lethal dose, and a toxic stage above this point. In our strophanthus experiments hardly suf-

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ficient records were made to determine definite lethal percentages, but we are confident that in most of our results the lethal period was below our figured results. With the more concentrated solution, the 30 per cent period passed so rapidly that records show nearly an immediate toxic period; the weaker solutions gave, at best, a rapid onset of toxicity. The results are convincing to show that minimum doses give rapid digitalis action. Our results check very closely with those determined by Hatcher and Brody.⁴ We secured in addition graphic records of the varying phases of the drug action.

Autopsies were made after each experiment; in all cases was found marked contraction of all abdominal viscera, including the bladder and intestines, extending up as far as the pylorus. The left heart was generally found in marked systole, the right in diastole, the auricles generally distended.

The use of strophanthus was brought to the attention of English observers by Dr. David Livingstone, the explorer,⁵ and Sir John Kirk, then consul at Zanzibar. The therapeutic value was first demonstrated to the profession by Sir Thomas Frasier,⁶ who isolated the active principle strophanthin and recommended this drug as a substitute for foxglove. The original plant was named by Professor Oliver of Kew, *Strophanthus Hispidus* De Candolle. The original drug was the dried ripe seeds and designated as *Strophanthus Kombe*. The United States Pharmacology of 1910 says that "*Strophanthus* is the dried ripe seed of *Strophanthus Kombe* (Oliver) or *Strophanthus Hispidus* (De Candolle); the chief substitutes are *Strophanthus Hispidus* and *Strophanthus Gratus*." Hirschfelder says, "according to the U. S. P., *Strophanthus* is prepared from *Strophanthus Kombe*," but Wilbert says "this is practically out of the market." As there are some twenty-eight species of the *strophanthus* family,⁷ difficulties are presented in securing the true drug and substitution has crept in.^{8, 9} Oftentimes better seeds of other species have given more satisfactory results than a poorer quality of the true drug.

Strophanthus Kombe seeds or green *Strophanthus* are obtained from a climbing plant indigenous to eastern tropical Africa.¹⁰ An extract prepared from them is used as an arrow poison, as with the greater part of this group. The varieties which are substituted for the true *Kombe* seeds,^{11, 12} are *Strophanthus Hispidus*, which is known as brown

strophanthus, coming from the west coast of Africa; *Strophanthus S. P.*, known as white or wooly *strophanthus*;¹³ *Strophanthus Gratus* (Franchet) a brown seed but of different form than the *hispidus*. From *Strophanthus Gratus* seed is derived an active principle *strophanine*¹⁴ which Arnand¹⁵ found identical with crystalline ouabain; this later was called crystalline *strophanthin-g*, thereby causing confusion, as the terms crystalline ouabain and crystalline *strophanthin* have been used interchangeably by various authors.

Amorphous *strophanthin*,¹⁶ the active principle of true *Kombe*, is a glucoside, whereas the active principle of the various substitutes generally contains a pseudo-glucoside which is twice as active as the true. This factor with that of the use of immature seed produces the varying results in therapeutic action.

The tincture of *strophanthus* (10 per cent) is the only form, besides the *strophanthin*, recognized by the U. S. P. The indications for its use are the same as for the tincture of *digitalis*, although in general the *strophanthus* preparations are more readily destroyed¹⁷ by the juices of the gastro-intestinal tract. The British Pharmacopeia recognizes a tincture (2.5 per cent) and an extract to be taken internally. But better results are secured in the administration of the *strophanthus* series when given by the hypodermic syringe, subcutaneously, intramuscularly or intravenously.

Strophanthus is a cardiac stimulant and a diuretic analagous in action to *digitalis*. While more effective in increasing the force and lessening the rate of heart action, it does not constrict the blood vessels.¹⁸ As a result it facilitates the treatment of impaired circulation due to a weakened myocardium, without its effect being antagonized by marked contraction of the blood vessels. It is less liable to cause nausea and gastro-intestinal disturbances than *digitalis*.¹⁹

Strophanthus is of great value in shock and collapse and threatened syncope. In the convalescence of children from myocardial and endocardial invasion, with kidney involvement; in senile heart patients with great dyspnea; in lung stasis and especially pneumonia,²⁰ and in chronic kidney lesions, the results are better than with *digitalis*. It may be considered a drug that can be generally used where *digitalis* is indicated and not feasible.

The physiological effects are: increased myocar-

dial tone with lowered heart rate,²¹ diminution of dyspnea and palpitation, and increased kidney action due to flow through the renal vessels.²²

The tincture is the only form that may be safely administered by the mouth. It may be given in doses 0.3 to 0.6 c.c. (5-10 m.). The majority of cases do not assimilate the drug readily from the gastro-intestinal tract. As it rapidly disintegrates,²³ one must constantly be on guard for the case that gives intense response to the smaller dose. Hence the minimum dose is preferable at first, with increase in a couple of days if there are no indications of overaction.

As strophanthus action is similar to that of digitalis, the previous administration of digitalis must be taken into consideration. The tincture has been given by inhalation with definite action.²⁴ The tincture may also be used hypodermically or intravenously in one to three minim doses by first slowly evaporating the alcohol and diluting with decinormal saline.

True Strophanthin Kombe used hypodermically produces little irritation, whereas the crystalline forms, or those of the substitution forms, are generally painful for some time following the injection.

The best results with strophanthus are obtained with the smaller doses of the true glucoside strophanthin, giving to the average adult hypodermically one five-hundredth of a grain (0.00013 gm.) to one two hundred and fiftieth of a grain (0.00026 gm.), one dose a day (or in emergency three doses), this for three to five days, then an interval of several days and another series. In shock, recovery is more prompt with the smaller doses. In fibrillation²⁵ of the auricles strophanthus is a wonderful drug. General improvement, lowered ventricular rate, less edema and dyspnea, improvement in kidney action follow its use; the tincture was used in a number of cases, improvement was marked but less spectacular than with Strophanthin Kombe.

In cases of asthenia with toxic myocardial factors, with the elimination of the pathology the use of the tincture, or better, the strophanthin by hypodermic²⁶ in small doses, is a valuable adjunct.

In cardiovascular diseases of childhood following contagious diseases, one seven hundred and fiftieth of a grain (0.00008 gm.) or less on alternate days, produces marked improvement. Senile individuals, including those suffering from cardio-renal

disease, show increased myocardial tone, loss of edema and general improvement on the small daily dose. Strophanthus in small doses has given excellent results in pneumonia, even during the early processes, especially where the use of digitalis was not feasible. In chronic valvular heart disease with high blood pressure,²⁷ use of strophanthus in small doses gives excellent results.

The available forms of the true Kombe drug are the hypodermic tablet of strophanthin (Burroughs, Wellcome & Co.) rapidly soluble, causing little irritation, and the aqueous solution in a sealed hard glass container of strophanthone (Parke, Davis & Co.). Both houses also supply a reliable tincture for oral use. Finally, to secure strophanthus results, be sure you have Strophanthus Kombe with the name of a reliable firm. Remember it is one of the digitalis family; if it or another member of the series has been used, exhibit smaller doses to avoid toxic symptoms. Keep within the therapeutic range. Smaller doses produce better results than doses bordering on the toxic side.

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CONCERNING MODERN RADIATION THERAPY AND ITS INDICATIONS IN THE TREATMENT OF CERTAIN BENIGN AND MALIGNANT CONDITIONS*†

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High voltage or short wave x-ray therapy as a means of combating malignant disease is now suffering the inevitable reaction from the over-enthusiastic statements of its early advocates. Reports emanating from Germany at the close of the war were so optimistic in tone that hope was aroused that this new method might be a specific for the treatment of carcinomata and sarcomata which had not already destroyed some vital organ. At the present time, much difference of opinion exists among workers and observers, not as to the specific action of these rays upon the cancer cells, but as to the selection of cases which offer hope of successful attack and the permanency of the cures which may result. It is the writer's opinion that the period of observation in this country is still too short for a proper appraisal of modern radiation therapy. Many of the failures have doubtless been due to improper technic and many others to a selection, either through necessity or choice, of cases not amenable to treatment.

Action.—The physiological action of radiant energy is fairly well established. Through its action upon the nucleus, cell division is delayed or wholly prevented, this action being more pronounced in young, rapidly multiplying cells, such as characterize carcinoma and sarcoma. Since the cancer cell is short lived, it soon becomes harmless if division is prevented. Heavy irradiation further stimulates fibrosis within the tissue stroma, and this tends to wall off, to choke, as it were, and thus to prevent the growth of those cancer cells not wholly devitalized.

Technic.—Since the lethal dose for most carcinoma cells is approximately the same as the epilation skin dose, the problem which must be met in a given case is to deliver this quantity of radiation to every part which is or may be the site of carcinomatous involvement.

Procedure.—As a matter of convenience, we let the arbitrary figure 100 represent this dose at the skin surface. A cross section of the part to be treated, as for instance the pelvis, is drawn upon transparent glass which is laid upon a standard anatomical cross section of this part of the body and the various points of involvement sketched in. By means of tables based upon the voltage, distance, filter and size of ports employed, it is now possible to determine the exact percentage of radiation reaching any one of these points through each port of entry. By a simple process of addition, the operator may readily determine the dosage required through each port to give from 100 to 115 per cent of an erythema skin dose to every depth point. The calculation must take into consideration the size of each port of entry, since it is found that secondary radiation is greater in the larger ports and is an important factor in making up the aggregate dosage. In the preparation of such a chart, it is often found impossible to reach the cervix with a full 100 per cent without doing irreparable damage to the skin and superficial tissues. In this event, radium is employed within the cervix to bring the percentage up to the required amount. Technical difficulties are much greater in treating lesions which lie but a few centimeters beneath one surface, since it is often more difficult to administer a lethal dose to subcutaneous tissue without permanent injury to the skin.

Preparation of the Patient.—The tissue and blood changes resulting from heavy irradiation are so great that the proper preparation of the patient becomes of the first importance. Careful blood and urine examinations should be checked between each course of treatment and may be the means of avoiding serious complications. Normal saline protoclyses should be given daily throughout the series. The amount of radiation to be given on any one day should, as far as possible, be kept within the easy toleration of the patient, since it is highly desirable to avoid severe irradiation sickness. Diet should be limited to liquids, but these should be forced as much as possible.

Pre-operative Treatment.—Since there is much experimental evidence to prove that the irradiated cancer cell will not reproduce itself when transplanted, it is probable that much might be gained in statistical results by the routine pre-operative radiation of all operable cases. After this is done,

†From the Department of Roentgenology of the Minneapolis Clinical Association.

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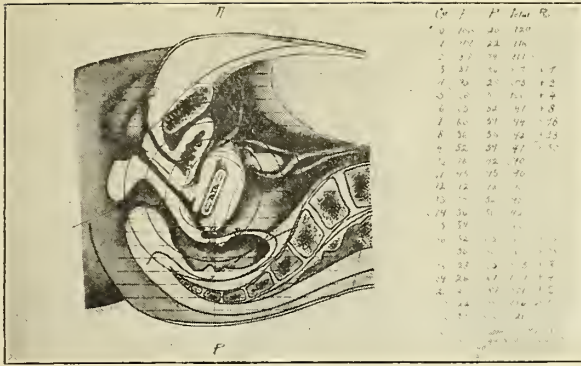


Fig. 1

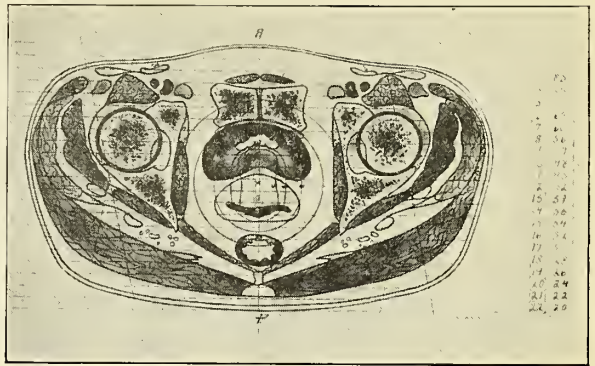


Fig. 2

Figures 1 and 2 (after Schmitz) illustrate the method of determining the combined intensities of radium 8 x-rays at different depths.

however, a period of from ten days to three weeks should elapse before any radical procedure is attempted. This position is taken for two reasons: (1) the post-irradiation blood changes greatly increase operative mortality; (2) the height of the effect of radiation upon the organism is not attained until about the tenth day and then is maintained for three or four weeks.

Post-operative Radiation.—While the writer continues to advocate post-operative treatment when operation has been performed before he is consulted, it is probable that this is not so effective as pre-operative treatment. There are several objections to post-operative irradiation as a reliable procedure:

1. Radium cannot be used effectively because there is no localized point of attack.

2. Cancer cells may have been picked up by the open lymphatics during the operation and carried to some distant organ beyond the reach of any radiation.
3. Post-operative complications may render it difficult or impossible to properly treat the patient until too much time has elapsed to accomplish the greatest good.

CLINICAL APPLICATION

The success with which radiation attack is attended varies greatly, depending upon the part of the body involved. Hence the clinical aspects of this paper will deal with cancer in different anatomical locations.

Uterus.—Cancer of the cervix and fundus uteri come under different classifications for the following reasons: In carcinoma of the fundus, surgical

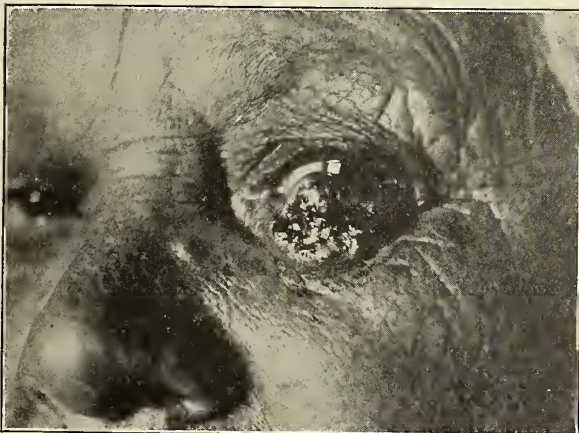


Fig. 3

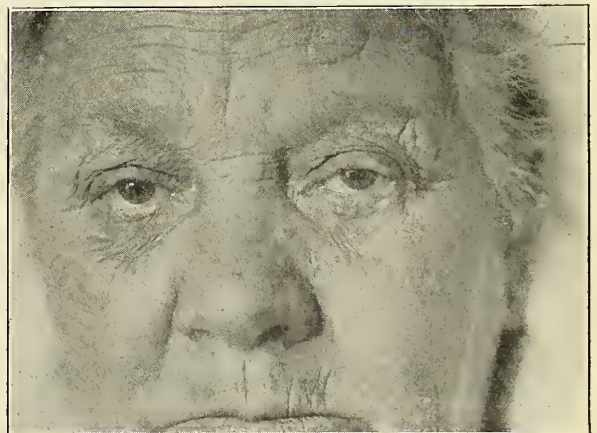


Fig. 4

Figs. 3 and 4 show the effect of radium upon a carcinoma of the lower lid.

results have been good and probably cannot be improved upon by any known method of treatment. On the other hand, the results of surgical treatment in carcinoma of the cervix, regardless of the methods employed, have been far from satisfactory. But a small percentage of cases presenting themselves for treatment are operable and of these a small number die from post-operative complications and a larger number from recurrent or metastatic carcinoma.

If one employs radiation therapy, he is not so restricted in his selection of cases, since it is only the far advanced, utterly hopeless case which needs to be rejected. There is practically no immediate mortality. In the advanced inoperable cases, there is usually very satisfactory palliation and occasionally a temporary or symptomatic cure.

Border-line cases seem to offer a much larger percentage of three to five year arrests than were ever obtained by the most radical surgical procedures. Early operable cases have rarely been

treated by radiation alone, since the time has not yet come when one may feel justified in recommending complete reliance upon radiation without the benefit of early surgical removal.

Based upon these considerations, the writer has taken the following position relative to the treatment of carcinoma of the cervix to be held until further data are available which may tend to modify that position:

1. There should always be an early consultation between the surgeon or gynecologist and the radiologist to correctly classify the case and to map out the proper therapeutic procedure.

2. Those cases considered by the surgeon to be readily operable should have radium applied to the primary lesion. After a lapse of at least ten days, a radical operation should be performed. As soon as possible thereafter, the patient should be submitted to short wave x-ray radiation to the entire pelvis.

3. All border-line cases should be advised to



Fig. 5



Fig. 6

Figs. 5 and 6 show the favorable action of radium upon angiolipoma with malignant manifestations.

rely upon radiation therapy, and this should be given with the most scrupulous thoroughness. Ultra-violet radiation should be employed both before and after this treatment to counteract its harmful effects.

4. The more advanced inoperable cases should be given the same thorough radiation therapy not only to control hemorrhage, foul discharge and local symptoms, but in the hope of arresting the disease.

5. There is another class for whom nothing can be offered even in the way of palliation. These are the cases with extensive cachexia and wide involvement of contiguous organs, such as the bladder and rectum.

As previously stated, the writer regards his own statistical data as of insufficient volume and duration to be of value, but believes that the citation of the few outstanding cases in his series of sixty-four cases of carcinoma of the cervix may add some weight to the above conclusions.

Mrs. O. K., first treatment November 15, 1919. Eight months previously she had noticed a slight bleeding after an enema which she attributed to hemorrhoids. Three days before treatment she had a very severe hemorrhage only controlled by packing the vagina. Examination showed extensive fungoid mass involving the entire cervix and extending upward on the right side along the broad ligament. There was profuse discharge with a very foul odor. The mass bled freely on slight manipulation. Microscopical diagnosis was not made but there was no doubt in the minds of several consultants that the case was one of advanced malignancy. Fifty mg. of radium for sixty hours seemed to completely control the hemorrhage and the discharge. From December 4th to March 2nd she was given three courses of x-ray treatments through the abdomen and back. There has been no recurrence and the patient is apparently in perfect health.

Miss Anne B., first examined May 12, 1921. There had been metrorrhagia for the past three months. There was marked fixation of the uterus, the cervix was ulcerated and deeply infiltrated and the infiltration extended upward toward the left broad ligament. The patient was placed in the knee-chest position and radium needles were embedded around the area of apparent involvement. Later she was given a single course of x-ray treatments through the abdomen and back. This patient was last seen on March 1, 1923. At that time there were no signs of recurrence, the uterus was freely movable and normal to inspection and palpation, and the patient's general health was excellent.

Both of these cases were referred as inoperable carcinoma of the cervix and while no sections were made for microscopic study there is little doubt as to the diagnosis, especially in view of their response to radiation therapy.

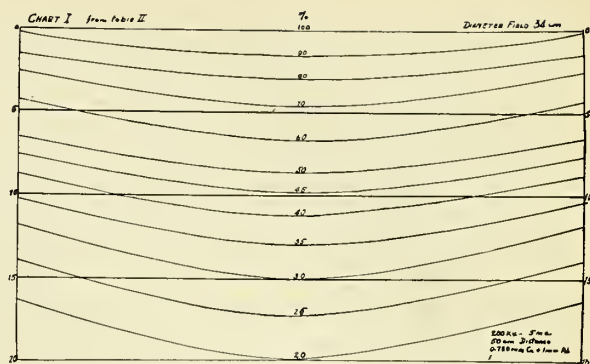


Chart I

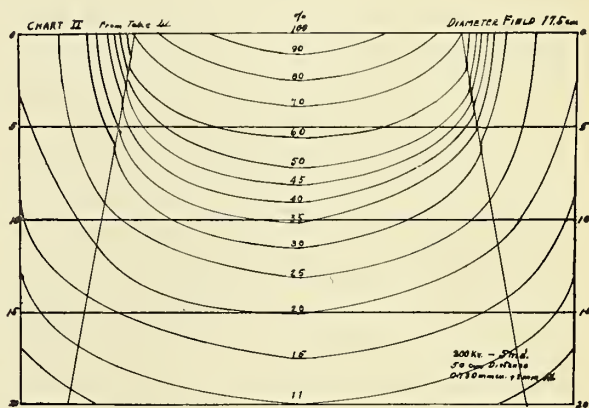


Chart II

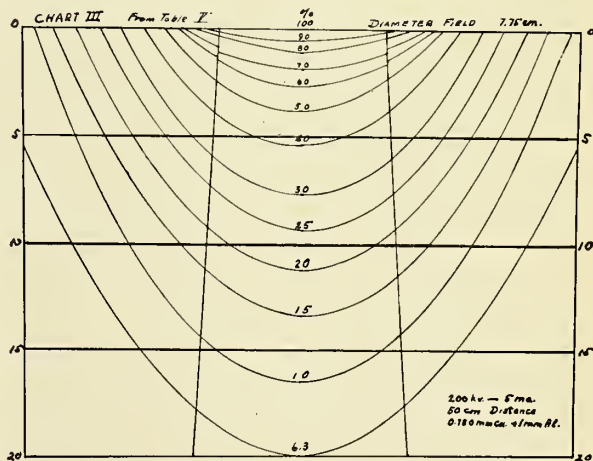


Chart III

Charts 1, 2 and 3 serve to illustrate the difference in percentage—depth—dose with ports of different diameters.

Breast.—Owing to the position of the primary disease, much nearer the anterior than the posterior surface, the treatment of breast cancer offers difficulties not encountered to the same degree in the treatment of pelvic cancer. While it is usually possible to deliver as much as 65 to 70 per cent of the epilation skin dose to the entire breast area through the anterior chest wall, the raising of this percentage to the required 110 per cent offers very great difficulties. This is especially true in women with deep chests.

If one is able to deliver as much as 30 per cent to the carcinomatous area from the back, about 17 per cent reaches the anterior skin surface to add to the dose already given, which is more than the skin will tolerate. In a measure, this difficulty is overcome by increasing the percentage depth dose through the expedient of increasing the distance between the skin and tube target and employing larger ports of entry.

Some of the best results which the writer has seen were obtained with the technic employed about three years ago, when we were using lower voltage, lighter filtration, a long distance and treating between three and four hours through the anterior port. This was supplemented by attack through multiple ports of back and sides. Some of these patients who showed unmistakable intra-thoracic and supra-clavicular metastases have been kept alive and in a fair state of health for from three to five years.

When it is possible to supplement the x-ray treatment with embedded radium needles, we are apparently able to do more toward causing an arrest of the active malignant disease. While results have been disappointing, regardless of the technic employed, it must be borne in mind that the only cases received for treatment have been the advanced inoperable ones or those presenting post-operative metastases. In some of these, we apparently are able to completely arrest the progress of the disease, while in others, similar in all respects, the radiation seems to be of little avail.

I still believe that axillary metastases are best treated by means of the radium pack. In the light of my own observations, without regard to published statistics of others, I have little hesitation in taking the position that all operable breast cancer cases are primarily surgical and that radiation therapy should be regarded as a reinforcement agent. I repeat, however, that the surgeon is scarce-

ly justified in hastening to operate without first giving careful consideration to the question of pre-operative and post-operative radiation.

Case Reports.—Mrs. Bessie K., of St. Paul. Halstead operation for cancer of the breast performed in April, 1918. In November, 1919, she noticed a small growth attached to the chest wall and in January, 1920, another bunch above the clavicle and a small mass was found in the right axilla. She was referred to me for treatment in February, 1920. A combination of x-ray and radium was employed and all of the tumors were controlled with the exception of the one above the clavicle, which proved very obstinate. This finally disappeared but a large area of skin was destroyed by the repeated x-ray treatments. Ulcer finally healed with a deep scar. No treatments were given from January, 1920, until February, 1923. At this time a mass developed above the scar in the neck. This had all the characteristics of metastatic carcinoma. Following heavy x-ray radiation repeated once after a four weeks' interval, the mass disappeared and there has been no further evidence of recurrence.

Miss Mary P., aged 69, was referred to me in November, 1920, with a diagnosis of carcinoma of the left breast. There was a movable mass in the upper left quadrant and readily palpable glands in the axilla and above the clavicle. An x-ray examination of the lungs was negative. Radiation therapy was instituted and continued at intervals of four weeks for six months. There was immediate improvement and after three months no tumor or glands could be palpated. There has been no recurrence to date.

These two cases represent two wholly different groups. The first was a post-operative metastatic recurrence and undoubtedly owes the prolongation of her life to radiation. The second is open to question as to diagnosis, since no section was made. Clinically, however, it was a case of carcinoma with multiple metastases. The cases are reported chiefly to show that we are justified in treating all inoperable breast cancers, even though most of our end results have been unfavorable.

Skin Cancer (Epithelioma, Basal Cell, Spindle Cell).—Basal cell type will usually give good results regardless of the method employed to eradicate it, but the cosmetic results obtained by the combined use of radium and ultra violet rays leave little to be desired. Although I have treated a large series of cases with this diagnosis, only two have failed to respond properly to radiation. If they do not respond favorably after the first hyperintensive irradiation, further treatment along this line is probably contraindicated. Epithelioma of the prickle cell type will usually heal promptly, leaving a soft, pliable scar, and experience seems to justify radiation treatment of these cases when received relatively early. It must be borne in mind, how-

ever, that no treatment is too radical since the lesion is an exceedingly dangerous one. I believe that with the conjoined use of ultra violet rays, it is possible to employ about 50 per cent more radiation than would cause an epilation of the normal skin. The cervical lymph nodes (in cancer of the lower lip) should always receive heavy radiation given with the same technic employed in breast carcinoma.

Unfavorable Types.—I have seen no encouraging results from the treatment of carcinoma of the tongue, epithelioma of the buccal cavity or of the rectum. Results in carcinoma of the vaginal wall have been unfavorable, also, although in some instances the immediate results seem to be good. I have one case apparently cured. In this case, very heavy irradiation was given to all of the surrounding tissues with the intention of producing an intense fibrositis to block off all of the lymphatic drainage from the part. As a result of this, a late post-radiation necrosis occurred several months after treatment. We must teach the public not to be too critical when these untoward effects result. Just as the surgeon who is too conservative does not cure cancer, so the radiologist who fears criticism too much may fail to accomplish the greatest good. An intense fibrosis in the deep tissues may cause a local necrosis, but this is not dangerous to life and should receive little consideration when one is treating malignancy.

Relative to cancer of the tongue, the best results now being reported are obtained by means of electric coagulation supplemented by radiation. I have recently treated two cases by this method and hope to report results at a later date.

Non-malignant Disease.—Not in the treatment of malignancy, which is a discouraging undertaking at best, but in that of certain non-malignant types of disease, does the radiologist reap his greatest reward in satisfactory results. Here, too, he meets with sharper objections from the surgeon because it is this same class of cases which have given him his best results.

Myoma of the Uterus.—These cases are divided radiologically into two classes: (1) those of relatively small size producing no pressure symptoms; (2) those of larger size (four months pregnancy or larger) usually producing some pressure symptoms.

Both classes of cases are amenable to radiation

therapy, but in the latter group there are more arguments in favor of surgical removal. Radiation will control menorrhagia at any age, but since it is not always possible to control symptoms without producing a permanent menopause, the method may be subject to this contraindication in women under thirty-five years of age. With these exceptions, it may be conservatively stated that there are no contraindications to radiation therapy in myoma or its essential symptom, menorrhagia.

The following advantages are suggested:

1. If the loss of blood has been severe, the patient is often a poor surgical risk, while the simple application of radium is practically without danger.
2. The patient is often able to continue her occupation without interruption.
3. Patients will often submit to radiation much earlier than they will to surgical intervention.
4. The procedure is successful in practically all cases, and there is no operative mortality.

Technic.—The choice of radium or x-ray depends upon the case itself and the judgment of the radiologist. I prefer the use of radium in the more acute cases somewhat bled out from hemorrhage, when hospital care is indicated in any event. Usually there is one rather free menstrual period following the treatment, but after that the menopause transpires rapidly. On the other hand, the ambulatory case, which is not so urgent, may be treated to better advantage with x-rays. In these cases, I prefer relatively light dosage with the intention of producing a cessation of menstruation after about three months of treatment. A few cases of essential menorrhagia or metrorrhagia have been treated with marked success and without producing a cessation of menstruation. Results have been so uniformly satisfactory in the writer's experience that he now considers radiation the method of choice in all cases of menorrhagia due to myoma in women beyond the earlier child-bearing age.

Case Reports.—Miss W., aged 36. Unmarried. Occupation, clerk. Chief symptoms, menorrhagia. Duration, eighteen months with progressively increasing severity. Hemoglobin, 65 per cent. She is well nourished but complains of tiring easily. One tumor the size of a three months' pregnancy can be palpated. On May 27, 1922, 50 mg. of radium, filtered with 1 mm. of brass and 0.5 mm. of silver were inserted into the cervix and allowed to remain twenty hours. On June 14th, 17th and 31st she was given x-ray treatments through four ports. On July 16th a menstrual period occurred and lasted four days but the flow was not excessive. Since that time there has been no

menstruation and the patient's health and strength are now above her previous normal. Hemoglobin, 90 per cent. She has lost but one day of work.

Mrs. S., aged 48. Married. No children. Occupation, business woman. Menstruation normal until March, 1921, when it became excessive. Following this there was no complete cessation in the flow, which merely became more profuse at regular periods. Examination showed a somewhat enlarged uterus, retroverted with a large mass in the right half. Marked anemia. She was first given x-ray treatments on September 16th and flow ceased at midnight for the first time in seven months. Recurrence at next period, when she flowed for ten days. In November she received another course of x-ray treatments. On December 3rd she had 1,000 mg. hrs., the radium being packed in the cervix and cul-de-sac. An unexplained temperature of 103 degrees made it advisable to remove the radium. The temperature promptly dropped to normal and on December 5th she received an additional 600 mg. hrs. There was a slight flow the following month, but since that time there has been no menstruation.

Dr. H. M. N. Wynn recently made a pelvic examination and reported everything normal.

The above case is selected for report because it was one of the most obstinate of my series.

Miss A. C. S., aged 47, was referred by Dr. Litzberg in March, 1920. Dr. Litzberg stated that there was no demonstrable tumor but there was a history of severe menorrhagia for the past ten years. Patient stated that this seriously interfered with her work and that she was completely exhausted when evening came. She received one course of x-ray treatments during March and all menstruation ceased for one year. At this time bleeding recurred and she was given one treatment through four ports of entry on June 23, 1921. Since then there has been no bleeding. Patient states that life is enjoyable for the first time in ten years.

Exophthalmic Goitre and Hyperthyroidism.—The literature contains such widely variant opinions relative to the efficacy and justification of radiation therapy in these conditions that much confusion apparently exists. The purpose of radiation here is to produce a mildly depressant effect upon glandular activity and with proper technic it seems possible to accomplish this in a large percentage of cases. If the metabolic rate is high and the classical symptoms are rather pronounced, there is nearly always a marked improvement from the first. The cases which fail to respond favorably are those with only a slightly increased metabolic rate and rather indefinite symptoms. On the other hand, the frank exophthalmic cases with classical symptoms will improve progressively for months or years after radiation. On the whole, I believe that carefully compiled results would compare quite favorably with those of surgery, but time does not permit such a compilation of my own cases for this paper.

THE TONSILS *

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It is difficult to present anything new about the tonsils as a focus of infection in childhood or to demonstrate cases unlike those seen in routine practice. The reason for this is that the tonsil was the first organ recognized as having a relation to systemic conditions. As far back as 1789 Eyerlin¹ considered the relationship of tonsillitis to rheumatism as clinically evident. Since this time a vast amount of literature has accumulated on the subject. In the last twenty-five years, approximately 250 papers have presented research or clinical data to prove this association from a scientific standpoint.

Many medical subjects have been discussed in cycles. This is true of focal infections in general and at some stages the tonsils have been unduly emphasized as a source of infection.

One is astounded at the extensive list of ailments of which the tonsil is accused of being either a direct or contributing etiologic factor, not only by the laryngologist but by the internist, the surgeon, the dermatologist, the orthopedist and other students of special branches of medicine. The pediatrician, not to be outdone, has found few conditions in the general literature which have not been recognized in children, and, in addition, a few disorders peculiar to childhood. One most important fact that has been conclusively proved is that the tonsils may be foci of infection which are only manifest by remote general symptoms when the tonsils have never given cause for suspicion.

The anatomy of the tonsils shows that they are practically aggregations of lymph nodes covered by epithelium. Indentations are present, forming crypts. Positive definite knowledge of the physiology of the tonsil is unknown. There has been, however, on account of this lack of knowledge, much speculation. They are regarded, like other lymph nodes, as exercising a protective function. They act as a sieve—"the first line of defense"—against microbic invasion. Stohr has shown that the tonsils are filled by an enormous number of

*Presented in the Pediatric Clinic before the Southern Minnesota Medical Association at Faribault, June 11, 1923.

leukocytes, which show a sort of migration toward the surface.

The rôle played by the tonsils in the production of lymphocytes has been conclusively demonstrated by Wood. He regards this as a most important function. Pierson showed that large numbers of lymphoid cells pass through the tonsils into the oral cavity, to become the salivary corpuscles. Changes in the speaking and singing voice have been noted after removal of the tonsils. This may be due to the fact that the palatoglossus and palatopharyngeus muscles are never wholly normal in their action following tonsillectomy. The theory has been advanced that the tonsils develop an internal secretion similar to the suprarenal glands. It is interesting to note, however, that so eminent a pediatrician as Dr. LaFetra has stated that he has never been able to note any abnormality in growth or development in the boys and girls whose tonsils had been removed in early childhood. Whatever advantage the tonsils may have physiologically, it would seem that Nature has provided sufficient other tissue of that same sort to take up vicariously the work of the tonsils when these are removed.

A well founded impression exists that children whose tonsils have been removed are less susceptible to respiratory and gastrointestinal disturbances. If measles, scarlet fever or diphtheria are contracted, certain obstructive symptoms are less evident and the disease is less pronounced. Part of this may be due to the better physical condition of the children.

The gross appearance of the tonsils when considered alone may give very little indication of their power for harm. As a rule, the dangerous tonsil which is a carrier of disease or a focus of infection is not large, and is usually without any evidence of local inflammation on its surface. It may show the effects of adhesions or be buried by the pillars. Tonsils capable of reacting to an acute infection are usually of good size, exhibit a large drainage surface between the pillars, and are usually not the cause of chronic disease but of strictly local involvement. When inflamed temporarily, the child may develop a grave systemic disturbance. Certain conditions peculiar to childhood are not regularly associated with the tonsils as a source of infection. In other conditions too much stress has been laid upon them as a focus. Some of the former I wish to discuss this morning.

ATHREPSIA

One of the most difficult chronic conditions that the pediatrician has to deal with in very young infants is athrepsia (marasmus, atrophy). In certain children there is an inherent weakness produced by a more or less unsuitable environment. Structural abnormalities are frequent causes of this condition, the most common of which are malpositions of the heart, and changes in the central nervous system and genito-urinary tract. When our knowledge is exhausted we take refuge in a "constitutional factor" or diathesis, but it is always with a feeling that something may have been overlooked. We talk less of such conditions as our actual knowledge increases in regard to processes going on in the organism.

In addition to these we must also consider parenteral infections. They are just as often the cause of the poor nutrition as they are the result. The artificially fed infant has less reserve energy than the breast fed, and less immunity to disease. Parenteral infections are frequently overlooked, especially if occurring without febrile reactions. Such an infection may disappear without sequelæ, but if repeated may result in a definite focus of infection in the tonsil. The reserve energy is decreased. This results in a stagnation of food, as has been previously known, with a colon bacillus invasion of the upper intestinal tract. This initiates a nutritional disorder. A parenteral infection may leave the infant constitutionally weak, but the infection is, nevertheless, the original factor in the nutritional disorder.

FOCAL INFECTIONS IN RELATION TO DIGESTIVE DISTURBANCES IN OLDER CHILDREN

Focal infections and the series of symptoms arising in the digestive tract play a much more prominent part in childhood than in the adult. These may manifest themselves in simple cases as anorexia and capricious appetite. In acute cases of pharyngitis food may be actually refused due to local pain in the throat or the effect of the prostration. The throat, in such cases, will be seen to be red and swollen, and with a loss of luster. With the passing of the acute stage of the infection the symptoms improve. If the appetite is persistently poor or capricious, the tonsils should be carefully examined again. If there is a persistent mucopurulent discharge from the back of the nose, it is easy to assume that enough of this material when

swallowed may set up a chronic gastric disturbance. That such material is swallowed can be easily demonstrated by gastric lavage.

Again, we may have to assume that there may be a chronic toxic effect on the nervous system in certain susceptible individuals, so that the loss of appetite, as in the adult, is to be regarded as a functional neurosis.

A coated tongue and foul breath are also not infrequently associated with enlarged tonsils. When not due to decayed teeth or to a demonstrable error in diet, infections of the nose and throat must be considered.

It must always be borne in mind that the child may not complain of any discomfort in the nose and throat, even in rather serious acute infections. Chronic muco-purulent discharges from the nose or into the pharynx may be observed by the mother. The tonsils may look innocent at one examination, and only the enlarged glands at the angle of the jaw indicate that infection is or has been present.

If this train of symptoms described above persists, it leads to a condition we have learned to describe as "malnutrition," or a certain definite percentage of underweight as compared to a normal child of approximately the same age and height.

It is to be remembered that if tonsillectomy is decided upon the patient is likely to be distinctly below par before the operation. As a result of a temporary withdrawal of food, the operative shock, anesthesia, etc., the child is in still poorer condition after the operation. The end results will be disappointing in many cases if the physician depends for his cure entirely upon the tonsillectomy. The after-care of the child must be carefully supervised. Strict dietetic and general hygienic measures should be instituted as soon as possible.

One of the most enlightening statistical papers, in regard to the occurrence of malnutrition in children with diseased tonsils, is that published by Kaiser.² Of 1,200 children operated on for diseased tonsils and adenoids, 34 per cent were nutritionally substandard. Reexamination one year later showed a reduction in malnutrition of 18 per cent. That diseased tonsils and adenoids do not necessarily impair nutrition is evidenced by 66 per cent of the children showing normal weight according to height. These figures should be kept in mind in attempting to determine the importance of the ton-

sil as a focus of infection in nutritional disturbance in older children.

CYCLIC VOMITING

The usual course of an attack of cyclic vomiting is familiar to most physicians. The symptoms are similar to a simple "bilious attack," with fever, nausea, abdominal pain, and following this the passage of a light colored stool, with or without mucus.

The diet has little, if anything, to do with the etiology, and attempts to control the disease by regulation of the diet have not given the results that were expected. This is not always due to the fact that the dietary supervision was not strict enough or that there was a lack of cooperation on the part of the parents or the patients themselves.

In my personal cases, at least 50 per cent presented a history of one or both parents being afflicted with migraine.

Peculiar metabolic disturbances were pointed out by Sedgwick and others, occurring between the attacks, which has led to the belief that these might play an exciting rôle and be characteristic of the disease. Such findings have been noted, however, in other conditions, and when found are not always associated with migraine or tonsillar infection.

The fact that most of these cases occur in the upper classes suggests that something in the manner of living may play a significant rôle.

Finally, we have to consider the possibility of infection in the tonsil as cause of these attacks. Sedgwick³ reported a series of cases which were strikingly benefited by the removal of tonsils. In a personal communication received some years ago he stated that some demonstrable pathology should be observed in the tonsil before attributing vomiting to this cause. Later Taylor,⁴ before this Society, reported a series of cases in which tonsillectomy was performed with excellent results. In Byfield's⁵ series, 70 per cent of those operated upon were reported as absolutely cured.

Such results seem to fortify the assumption that in the periodic vomiting of children focal infection plays the exciting rôle. When this infection is removed these children endure better nervous strain, fatigue, general diet, anesthesia, or whatever else may lead to the acute gastrointestinal disturbance and to excessive ketone formation. The diet, of course, should be regulated, while fatigue and undue nervous strain should be avoided.

If the focal infection is limited to the tonsils and adenoids, the prognosis is excellent in typical cases after tonsillectomy. If, after the removal of these structures, attacks still continue, careful examination of the nasal sinuses may suggest some further conservative surgery. The appendix has been removed with good results only in rare instances.

I do not wish to be understood as asserting that all cases of cyclic vomiting follow focal infection in the tonsils, adenoids or nasal sinuses. Particularly in the neurotic child we are frequently unable to demonstrate any source of focal infection. Anaphylactic phenomena may be a factor in such children.

PERITONITIS

I have been so unfortunate as to see one case of general peritonitis following a streptococcic sore throat. The throat symptoms had entirely disappeared four days before I saw the case. At the time of the first examination there was fever, rigidity of the recti more pronounced on the right side, tenderness over McBurney's point, abdominal distension, vomiting and constipation. Peritonitis, presumably secondary to a ruptured appendix, was diagnosed. At operation the appendix was found to be normal, but immediately below it free pus was found and an extensive peritonitis. A streptococcus was isolated which was culturally identical with a streptococcus obtained from the tonsils.

THE TONSILS AND SCARLET FEVER

Infected tonsils, the one constant lesion in scarlet fever, is regarded as a focus of infection. It is held by Bullowa⁶ that the severity of the infection is conditioned by the anatomical relation. He points out that rhythmic swallowing movements, when they compress the tonsils, force toxins or organisms into the lymph stream, with subsequent inflammatory reaction in the adjacent lymph nodes. He advocated incision of the plica or, in certain selected cases, tonsillectomy.

In a fairly wide experience with scarlet fever I have yet to see an occasion where such interference was indicated. In cases of long duration, with unusually persistent complications, this measure may justify consideration.

Byfield⁷ reports a case which, during convalescence from scarlet fever, presented considerable muco-pus in the nasopharynx. After each meal,

the child would calmly turn its head to one side and eject its gastric contents. Following the removal of the tonsils and adenoids this regurgitation at once ceased.

ARTHRITIS DEFORMANS IN CHILDREN

In this rather rare disease, when occurring in children less than three years of age, the portal of infection seems to be limited to tonsils and adenoids. It should be remembered, however, that sinus infections have been demonstrated during the first weeks of life.

The prognosis of arthritis deformans in uncomplicated cases is good so far as the arrest of the disease is concerned. The deformity and functional disability may persist for a considerable time.

ACUTE SUPPURATIVE ARTHRITIS

In contrast to the above, invasion of the joints and periarticular tissues by pyogenic organisms in infants is by no means a rare condition. The inflammation of the joints is practically always secondary to an infection in the epiphyses. Clinically there is swelling, tenderness and considerable induration. The overlying skin is not involved until late in the course of the disease, so that redness is not observed early. The constitutional manifestations are few when compared with infection elsewhere in the body. The common conception seems to be that purulent arthritis always follows a focal lesion and the tonsil is usually assumed to be the point of infection. As a matter of fact, the focus of infection is indeterminable in the majority of instances. In infancy the infecting organism in more than half the cases is the pneumococcus. The frequency with which the pneumococcus invades the blood stream of the young without involving the lung is notorious. In a series of cases reported by Johnson,⁸ a few had had pneumonia some weeks previous, but the relation between the original infection and the arthritis was not clear. In Johnson's series of cases, less than half gave a history, or showed on examination when admitted any definite source of infection.

After removal of the original focus, if arrest of the disease is not secured, it must be remembered that the first joint involved (fortunately this is usually a monarticular disease) may have become a new focus, for practically all of these conditions are purulent. The only conditions which have to be excluded in the differential diagnosis are scurvy

and hemophilia. A few young infants develop syphilitic inflammation of the joints following involvement of the epiphysis, and, as a medical rarity, an arthritis may follow ophthalmia neonatorum or result from a gonorrheal vaginitis.

ABDOMINAL PAIN IN THROAT INFECTIONS

We are indebted to Brennemann⁹ for an excellent article emphasizing the relationship between abdominal pain and throat infections. According to this author, it may occur either before, during, or after an acute throat infection. The nature and location of this pain are fairly constant. Very frequently the pain in the abdomen is the only thing complained of. Occasionally it lasts for weeks and even months after all other symptoms have disappeared. It may be more or less constant; more often it is distinctly intermittent. The pain may be slight and transient or the child may cry with it over a period of hours.

In the intermittent type the patient may merely distort his face, squirm, turn over on his side, or he may scream with each new attack. The abdomen is only exceptionally distended and tenderness on pressure is often absent.

When asked to locate the pain with the tip of the finger, the child will point to the umbilicus. Rarely the pain is diffuse, or more on one side than on the other.

Without this condition in mind, a diagnosis may be difficult. In a few cases, laparotomy, either frankly exploratory or based on a wrong diagnosis, has been made.

Why this pain occurs is not definitely known. Brennemann directs one's attention, however, to the mesenteric and retroperitoneal glands, and cites many cases to bear this out. That it does occur in infections having their primary seat in the throat

is evident from autopsies on cases dying from influenza during the recent epidemic.

The cause of the enlarged glands is again a matter of speculation. Two roads of infection are possible, according to this author: (1) by the blood stream; (2) by direct transmission. The former seems improbable, for a marked general adenopathy is not especially characteristic of these infections. A selective localization is possible, as in many other infections, such as typhoid and pneumonia. A frequently occurring cervical adenitis is not an analogous phenomenon, for here the invasion is manifestly along the lymphatics, and is strictly local.

The condition is of importance because of its frequency. As mentioned above, several children have been operated upon on insufficient diagnosis. If infected tonsils as a source of abdominal pain is kept in mind, this condition will cause us little concern.

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EDITORIAL

The State Meeting

Medical meetings come and go. This much may be said of the 1923 annual meeting of the Association held in St. Paul in October—in every way it was one of the best meetings we have ever had.

The registration of 550 was second only to that three years ago in St. Paul. This was in large part due to the extraordinarily fine program arranged by the officers of the sections, who constitute the program committee. The local Ramsey county committees, too, deserve special credit for the manner in which the association was entertained. Banquets as a rule incline to drag and have been considered a questionable asset. This cannot be said of this year's banquet when over 350 guests were dined and entertained by the snappy program.

The most important action taken by the House of Delegates was in the matter of the handling of committee reports and their recommendations. In the

future, the gist of committee reports will be published in MINNESOTA MEDICINE for review by the county delegates, in advance of the meeting, and recommendations of the various committees made at the first meeting of the House will be referred to the proper standing committee, or one to be specially appointed for consideration, and report at the next meeting of the House during the same session. This procedure should eliminate perfunctory acceptance of recommendations by the House itself.

The election of officers for the calendar year 1924 resulted as follows: President, Dr. Archibald MacLaren, St. Paul; first vice president, Dr. E. T. Sanderson, Minneota; second vice president, Dr. F. J. Hirschboeck, Duluth; third vice president, Dr. C. W. Bray, Biwabik; secretary, Dr. Carl B. Drake, St. Paul; treasurer, Dr. F. L. Beckley, St. Paul. Dr. F. R. Weiser, Windom, was re-elected Councilor for the Sixth District and Dr. W. F. Braasch, Rochester, for the Eighth District. Dr. J. C. Litzenberg, Minneapolis, was elected to act as delegate to the next meeting of the American Medical Association with Dr. O. W. Parker, Ely, as alternate.

It was also decided by the House of Delegates to accept the invitation to hold the next annual meeting at St. Cloud. The previous objections to this city for convention purposes have now been obviated by the completion of a new hotel and the construction of the concrete highway from the Twin Cities.

Non-Diabetic Acidosis

Since insulin has been proven to be a specific for diabetic acidosis, it is fair to study afresh the known factors back of non-diabetic acidosis. A survey of recent literature shows only one brief report from Talheimer, of Milwaukee, on this subject.

It is clear that elderly patients with clinical diabetes, may appear to be acidotic, but prove to be failing from wide-spread vascular changes with severe central nervous system depression. Insulin can only be expected to replace, in these patients, the one defect—that of Langerhans' island deficiency. Severe physiologic disturbances due to other causes will not be eliminated.

Ketone bodies are known to accumulate in the blood in various infections (particularly in the

young), so that acidosis may become a severe menace. The lack of any evidence of diabetes in these cases disposes of the idea that inability to provide native insulin (hormone) is back of it. We must therefore assume either that the native hormone is depressed or neutralized (Wilder) just as it is known to be during periods of infection in proven diabetic, or we may assume that other unknown factors, not excluding those of central nervous origin, may be in control. If this influence comes via the sympathetic nervous system it is easy to postulate that temporary adrenal overfunction soon rids the body of all its reserves of stored glycogen. If in addition there has been little intake of food (post-anesthetic), the available glucose being absent, the depots of bodily fat could easily supply the ketogenic pabulum. Accordingly, if insulin were administered, glucose must needs be provided and *retained*.

This is a good time therefore to study a variety of conditions with a view to accurately determine the degree of acidosis (CO_2 combining power of the blood plasma—Van Slyke, or CO_2 tension of the alveolar air—Mariott). If this is done it will not be long before authoritative statements can be made determining positively whether insulin has an added place in this field or not.

E. L. T.

The Registered Nurse

The professions of nursing and medicine have ever been and must of necessity continue to be closely associated. The medical profession has shown a deep interest in the comparatively new profession of nursing and has helped in its development. This has been to the advantage of both professions, for what physician or surgeon is not greatly dependent on the nurse, be she registered or otherwise? The physician makes a short professional visit but the nurse is in charge of the patient eight and usually more of the twenty-four hours.

It must be admitted that the nurses themselves have furnished the main impetus in the development of their profession and the law has rightly vested in them the dispensing of the title R. N. (Registered Nurse). The governor appoints a State Board of Examiners of Nurses to be composed of

practicing nurses, corresponding to the State Board of Medical Examiners and with corresponding duties. In short, it is the duty of the Nurses' Board to determine who are qualified to practice nursing as registered nurses.

It has been perhaps inevitable that the Board has been criticised by the directors of some of the smaller hospitals. There has been the feeling vigorously expressed at one of our recent sectional medical meetings, that the Board in its recommendations has been discriminating in favor of the larger hospitals with the definite purpose of eliminating the small hospital. There must be some limit to the size of a hospital capable of turning out a well trained nurse and we do not consider the minimum established by the Board of a hospital averaging twenty-five patients to be unreasonable. Certain minimal requirements too in the curriculum of the training school are absolutely essential.

The small hospital, on the other hand, cannot be eliminated by the Board as long as the latter has no jurisdiction over the licensing of hospitals. Naturally, small hospitals experience some difficulty in obtaining prospective nurses if their nurses' training school is not accredited—that is, their graduates are not eligible for examinations for the title of R. N. In this regard, grave injustice has often been done the trainee, who is given to understand that the hospital is accredited when such is not the case. So that the smaller hospitals may not be at a disadvantage, affiliation with other designated hospitals is frequently effected.

The first bill presented by the nurses at the last legislature aroused vigorous opposition. What the committee of nurses desired primarily was an elevation of entrance requirements to a four year high school training. Minnesota has been and still is one of the five states in the Union having a low preliminary requirement of grammar school education, the other four being southern states. This fact in itself is significant.

The standing of the entire nursing profession suffers necessarily as a result of the low preliminary requirements and it does not of necessity follow that a raising of these requirements would aggravate the present dearth in applicants for training. High school girls and those with one or more years of college training will not train with grammar school graduates. This low preliminary requirement and the dearth of applicants for train-

ing during the past few years has created a tendency on the part of the schools to accept anybody. Perhaps this situation accounts in part for some of the criticism directed of late at the nursing profession. They are charged with a tendency towards commercialism. In this regard it does not behoove members of the medical profession to throw a stone. When it is generally appreciated that the average nurse in Minnesota does not work more than nine months in the year because of the seasonal prevalence of sickness and that the average income is in the neighborhood of \$1,000.00 a year—barely a living wage—it will be realized that the nursing profession is no place for the young woman with commercial instincts. What a nurse furnishes is not measurable in coin and is admittedly poorly paid. It is truly a noble profession and not a trade and the young woman looking for a gainful occupation should go elsewhere. We do believe that the tendency on the part of trained nurses to furnish less for their fee by reducing the number of hours on duty and being too particular as to the kind of duties she will perform is a departure from the highest conception of the trained nurse and is a great mistake. Better to demand a higher fee than to furnish less service.

Opposition to the bill as first proposed centered on the clause requiring approval of training schools by the Board. This was felt to be an infringement of the rights of the smaller hospitals.

The modified bill which became law instituted five changes: (1) the Board is to consist of five nurses instead of four nurses and one physician; (2) there is to be an Educational Director supported by (3) a registration fee of \$15.00 instead of \$5.00; (4) examinations are to be held in various parts of the state; (5) reciprocity between states is to be based on individual qualifications independent of state requirements.

We do not feel that there will ever be any danger of a trained nurse being overtrained in the matter of nursing. There is room for some argument as to just how much medical knowledge should be included in the nurses' curriculum. We still contend that there is a demand for a nurse less highly trained than the trained nurse but with more training than the so-called practical nurse and that recognition of this fact would be to the benefit of the nursing and medical professions and, what is more important, to the public.

OBITUARY

DR. E. W. BUCKLEY

Dr. Edward W. Buckley, of St. Paul, died Wednesday, September 26, at St. Joseph's Hospital, St. Paul, at the age of 63 years. Dr. Buckley had been in failing health for the past year although still attending to his duties as a physician.

Dr. Buckley was born in 1860 on a farm in Ramsey county near White Bear, Minn. His youth was spent in Minnesota and with the exception of the years in college and university and two years immediately following, his entire life was passed in Minnesota. He was graduated from the high school at Mankato and then attended Holy Cross college in Massachusetts. He took his medical course and received his medical degree at Columbia University. Upon completion of his internship at Bellevue Hospital, Dr. Buckley came to St. Paul, where he began the practice of medicine.

Dr. Buckley was prominent as being one of two Legion of Honor men in St. Paul, having received his decoration from Marshal Foch for his distinguished work with the Knights of Columbus overseas. He was a former chief of staff of St. Joseph's Hospital, St. Paul, and past president of the Ramsey County Medical Society.

Dr. Buckley is survived by his widow, a daughter, Margaret, and a sister, Mrs. John Dougherty, of Mankato.

DR. CHARLES MONROE CANNON

Dr. Charles Monroe Cannon died suddenly Wednesday, October 17, at his home in St. Paul, at the age of 61 years.

Dr. Cannon was a member of the state board of medical examiners from 1902 to 1905. He specialized in surgery and had practiced in St. Paul since 1892.

Dr. Cannon was graduated from the Bennett Medical college in Chicago in 1888. The next two years were spent in Alden, Minn. Dr. Cannon then moved to White Earth, where he was United States surgeon for a year.

Born on a farm near Madison, Wis., in 1861, he attended the public schools at Cherokee, Iowa, and was a graduate of Drake university, at Des Moines. He was married July 3, 1888, to Miss Edith M. Morey, of Albert Lea, Minn.

Dr. Cannon was a member of the American Medical Association, the State Medical Association and various other fraternal organizations. He was past grand medical examiner of the Ancient Order of United Workmen.

The widow, two daughters, Mrs. Florence M. Barnard and Mrs. Blossom I. Kirkwood, his mother and brothers and sisters survive.

DR. SHERMAN RIPPERTON

Dr. Sherman Ripperton, of Wyndmere, N. D., formerly a practicing physician in Minnesota, died Monday, September 17, at the hospital in Lidgerwood, following a lingering illness of several months. Dr. Ripperton was 57 years of age at the time of his death.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

AMERICAN ASSOCIATION FOR THE STUDY AND CURE OF CANCER

On October 12th there was organized in the New York Academy of Medicine "The American Association for the Study and Cure of Cancer." There were over 60 enrolled from eighteen different states of the union and some from outside countries, as charter members.

Dr. L. Duncan Bulkley, New York City, was elected president; Dr. Curtis Frank Claassen of Brooklyn, vice-president; Dr. A. Hirst Appel, colonel in the Medical Corps, U. S. (retired), secretary and treasurer; with an executive committee of five.

The next annual meeting will be held in Chicago, in May, during the meeting of the American Medical Association.

NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

The Nicollet-Le Sueur County Medical Society held its annual meeting September 25, 1923, at the Nicollet Hotel, St. Peter. The principal paper on the program, "Fractures and Dislocations of the Femur," was read by Dr. J. M. Fisher of St. Peter, and was followed by a general discussion.

The Committee on Goiter Prevention, composed of Dr. J. W. Daniels, Dr. R. M. Phelps and Dr. H. A. Hartung, gave the following report of their activities:

The Nicollet-Le Sueur County Medical Society, having the matter of goiter prevention under consideration, extended an invitation to Dr. Talliaferro Clark of the U. S. P. H. Service, Washington, D. C., to visit the state for the purpose of making a survey of the goiter situation. Dr. Clark, in company with Dr. J. N. Gililan of the Minnesota State Board of Health, made the following report at the annual meeting of the society. The survey comprises a report of goiter conditions among children in the sixth grade up through the high school.

Number of children examined—Girls.....188
Boys.....121

309

Cases of thyroid enlargement.....111 or 35.9%
Of the girls 95 (or 50.5%) had enlargement
Of the boys 16 (or 13.2%) had enlargement
Of the 95 girls with thyroid enlargement—
40 (or 42.1%) were very slightly enlarged
43 (or 45.2%) were slightly enlarged
12 (or 12.7%) were moderately enlarged
Of the 16 boys with thyroid enlargement—
11 (or 68.7%) were very slightly enlarged
5 (or 31.3%) were slightly enlarged
None were moderately enlarged

MINNEAPOLIS SURGICAL SOCIETY MONTHLY CLINIC DAY

THURSDAY, NOV. 8, 1923

Abbott Hospital, 8:00 to 10:00 A. M.—Operative Clinics:
Drs. Abbott, Strachauer, Johnson.
Northwestern Hospital, 10:00 A. M. to 12:00 M.—Opera-

tive Clinics: Drs. Law, Mann, Poppe, Bulkley, Yoerg, Nordland.

Anatomy Building, 2:00 to 4:00 P. M.—Surgical Pathological Conference: Drs. E. T. Bell, Cameron, McCartney, Clawson, O'Brien.

6:30 to 8:00 P. M.—Dinner at Elks Club.

8:00 P. M.—Minneapolis General Hospital Clinic Room. Presentation of Clinical Cases and a paper by Dr. S. H. Baxter, "Retroperitoneal Tumors."

For further information address Dr. A. A. Zierold, Sec., 516 La Salle Bldg., Minneapolis, Minn.

WRIGHT COUNTY MEDICAL SOCIETY

The annual meeting of the Wright County Medical Society was held at Buffalo, Tuesday afternoon, October 2, 1923.

Officers elected for the ensuing year were: President, Dr. C. L. Roholt, Waverly; vice president, Dr. O. J. R. Freed, Cokato; secretary-treasurer, Dr. J. J. Catlin, Buffalo. Dr. A. E. Phillips, of Delano, was elected to act as delegate to the state convention with Dr. A. G. Moffatt, of Howard Lake, as alternate.

"The Report of a Case of Extra Uterine Pregnancy at Full Term" was given by Dr. J. J. Catlin. Dr. E. E. Shrader, of Watertown, presented a paper on "Endocarditis."

Following the business session a banquet was given for the members and visiting ladies.

GOODHUE COUNTY MEDICAL SOCIETY

At the annual meeting of the Goodhue County Medical Society held at Red Wing in September, the following officers were elected: President, Dr. A. M. Aanes, Red Wing; vice president, Dr. L. B. Gausemal, Goodhue; secretary-treasurer, Dr. M. W. Smith, Red Wing. Drs. A. W. Jones, A. E. Johnson and H. P. Sawyer, all of Red Wing, were chosen to compose the board of censors of the society.

OF GENERAL INTEREST

Dr. Charles I. Spannare, of Milton, N. D., has located at Round Lake, Minn.

Dr. J. A. Regner, formerly of St. Hilaire, is now practicing medicine at Middle River.

Dr. Victor C. Thompson, formerly of Stillwater, is now located at Marine-on-St. Croix.

Dr. Edward J. Brown, of Minneapolis, who recently underwent an operation at Eitel Hospital, is reported as recovering safely.

Dr. Richard N. Jones formerly of Gaylord is now located at Richmond, where he is a member of the staff of the Richmond Hospital.

Dr. French K. Hansel, formerly of the Mayo Clinic, Rochester, has located in St. Louis, Missouri, where he will establish a practice.

Dr. R. V. Williams, of Rushford, together with Mrs. Williams, recently returned from a trip through the Dakotas, Iowa and Illinois.

Dr. L. W. Satterlee, who has been practicing medicine at Pequot for the past six months, has returned to his former location at Parker's Prairie.

Dr. Clayton F. Andrews, formerly of the Mayo Clinic, Rochester, is now located at Lincoln, Nebraska, where he is engaged in the practice of medicine.

Dr. Gordon S. Foulds, formerly of the Mayo Clinic, Rochester, is now practicing his profession at 151 Bloor Street West, Toronto, Ontario, Canada.

Dr. J. L. Lee, formerly of Wahpeton, N. D., has disposed of his practice there and has established offices at Watertown, Minn., for the practice of medicine.

Dr. I. S. Benson, formerly a member of the Union clinic, Willmar, has moved to Montevideo, where he is a member of the surgical staff of the Community Hospital.

Dr. A. J. Chesley, executive officer of the State Board of Health, has returned from Boston, where he attended the meeting of the American Public Health Association.

Dr. O. N. Meland, of Warren, and Miss Mildred Langtry, of Minneapolis, were married at Brooklyn, N. Y., in September, just prior to sailing for Europe, where Dr. Meland is engaged in further pursuance of his studies in surgery.

The marriage of Miss Ruth Martin, of Saint Paul, to Dr. W. F. Widen, of Minneapolis, was solemnized at the Winifred Street Evangelical church, St. Paul, September 8. Dr. and Mrs. Widen are now at home in Minneapolis.

Announcement has been received of the marriage of Dr. Walfred Johnson, of Stillwater, to Miss Sophie Koelzer, of Jordan, which took place at Jordan, October 1. Dr. and Mrs. Johnson are now at home in Stillwater.

Dr. F. P. Frisch has disposed of his practice at Gibbon and is now located at Richmond. Announcement was recently received of the marriage of Dr. Frisch to Miss Palma Nelson, of Fairfax, which took place August 30.

Dr. and Mrs. W. H. Daniels and son, Harrison, of Crookston, recently returned from a motor and camping trip through the northern part of the state in the Superior National Forest.

Dr. Egbert Borgeson, of Hanska, who has entered the state university for advance instruction in eye, ear, nose and throat work, has disposed of his practice at Hanska to Dr. J. O. Pederson, formerly of Minneapolis.

Dr. F. W. Davis, who has been a practicing physician at Decorah, Iowa, for some time, has located at Adams, Minnesota, where he has established an office for the practice of medicine.

Dr. F. E. Harrington, health commissioner of Minneapolis, was elected head of the executive council of the American Public Health Association at its convention held in Boston last month.

Dr. Reuben A. Johnson, who was formerly associated with Dr. George Douglas Head, Minneapolis, has returned from a year's post-graduate work in Vienna, and has established offices at 301 Physicians and Surgeons Bldg., Minneapolis, for the practice of medicine.

The annual 1923 roll call of the American National Red Cross will be held from Armistice Day to Thanksgiving, November 11 to 29. This roll call is the only appeal which the Red Cross makes during the year and furnishes the means by which they carry on their fine work.

Dr. A. A. Zierold, of Minneapolis, read a paper on "Primary Peritonitis" at a meeting of the Minnesota Pathological Society held at the Institute of Anatomy building, University of Minnesota, October 16. Dr. W. A. O'Brien also gave a paper on "Acute Emphysema in Infancy," which was discussed by Dr. Rood Taylor and Dr. Clemens Pirquet.

Dr. John C. Staley, who has been superintendent of Ancker Hospital, St. Paul, since the demise of Dr. Ancker the first part of the year, has resigned his position owing to failure to recover completely from an injury received in an automobile accident which occurred a year ago. Dr. J. L. McElroy, former assistant superintendent, has been appointed to succeed Dr. Staley; Dr. F. G. Carter is assistant superintendent on a part time basis and is continuing his private practice with offices at 632 Lowry Building.

The remarkable reduction in the death rate from tuberculosis which has taken place in the last 20 years is probably due to a number of reasons. It is significant that as soon as the etiological factor in a disease has been discovered progress is made in the control of that disease. The death rate from tuberculosis since the formation of the National Tuberculosis Association in 1904 has been so reduced that it is estimated that lives of 100,000 persons in this country have been spared during the past year. This splendid work can be continued if the public continues to support the work by the purchase of Christmas seals.

MINNESOTA STATE BOARD OF HEALTH ITEMS

The activities of the Division of Venereal Diseases of the State Board of Health during September include the distribution of 1,851 pamphlets on various phases of sex education, applications for which were received at the State Fair booth. Wassermann tests totaled 962, of which 771 were for private patients, the balance for institutional patients. Of the venereal cases reported to the department, 552 were single, 299 married, and 54 widowed. The source of infection was as follows: commercial prostitutes, 190; clandestine prostitutes, 261; unknown, 450; spouse, 23; congenital, 15; and accidental, 4. The social service department handled 390 cases, 208 being old cases. The Wassermann reactions totaled 2,406 with 17.2 per cent positive.

Dr. Ruth Boynton, instructor in the department of preventive medicine, University of Minnesota, has been chosen to succeed Dr. E. C. Hartley as director of child hygiene, Minnesota State Board of Health. Dr. Hartley left for Berlin, Germany, October 15, to study medicine under Dr. Robert Meyer.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

ABBOTT LABORATORIES:

Argyn Tablets.

AMERICAN RADIUM APPLIANCE CO.:

Hydro Radium Activator.

PARKE, DAVIS & CO.:

Tablets Tuberculin B. E.-P. D. & Co.

Tablets Tuberculin T. R.-P. D. & Co.

Malt Extract (Unmedicated)-P. D. & Co.

Malt Extract with Cod Liver Oil-P. D. & Co.

Tobacco Protein Extract Diagnostic-P. D. & Co.

Goldenrod Pollen Protein Extract Diagnostic-P. D. & Co.

Sal Ethyl Capsules, 5 minims.

E. R. SQUIBB & SONS:

Ampules Pituitary Solution-Squibb, 0.5 c.c.

Ampules Pituitary Solution-Squibb, 1 c.c.

Pollen Allergen Solution Timothy-Squibb.

Pollen Allergen Solution Ragweed-Squibb.

SWAN-MEYERS CO.:

Ragweed Pollen Extract-Swan-Meyers.

WILSON LABORATORIES:

Tablets Ovarian Substance-Wilson, 2 gr.

Tablets Ovarian Substance-Wilson, 5 gr.

Capsules Ovarian Substance-Wilson, 2 gr.

Capsules Ovarian Substance-Wilson, 5 gr.

Tablets Ovarian Residue-Wilson, 2 gr.

Tablets Ovarian Residue-Wilson, 5 gr.

Capsules Ovarian Residue-Wilson, 5 gr.

Arsphenamine-Squibb, 1 gm. Tubes.—Each contains 1 gm. arsphenamine-Squibb (see New and Non-official Remedies, 1923, p. 49). E. R. Squibb & Sons, New York.

Arsphenamine-Squibb, 1.2 gm. Tubes.—Each contains 1.2 gm. arsphenamine-Squibb (see New and Non-official Remedies, 1923, p. 49). E. R. Squibb & Sons, New York.

Ampules Pituitary Solution-Squibb, 0.5 c.c.—Each contains 0.5 c.c. pituitary solution-Squibb (formerly marketed as solution of hypophysis-Squibb (see New and Non-official Remedies, 1923, p. 219). E. R. Squibb & Sons, New York.

Ampules Pituitary Solution-Squibb, 1 c.c.—Each contains 1 c.c. pituitary solution-Squibb (formerly marketed as solution of hypophysis-Squibb (see New and Non-official Remedies, 1923, p. 219). E. R. Squibb & Sons, New York.

Enteric Coated Tablets Neutral Acriflavine—"National," 0.0324 gm. (1/2 grain).—Each tablet contains 0.0324 Neutral Acriflavine—"National" (see New and Non-official Remedies, 1923, p. 25). National Aniline & Chem. Co., New York.

Ointment Neutral Acriflavine—"National."—Neutral acriflavine—"National" (see New and Non-official Remedies, 1923, p. 25) 1 per cent dissolved in glycerin, 8 parts, and incorporated with a base composed of hydrous wool fat and petrolatum to make 100 parts. National Aniline and Chemical Co., New York.

Pollen Protein Allergens-Squibb.—In addition to the Pollen Protein Allergens-Squibb listed in New and Non-official

Remedies, 1923, p. 241, the following have been accepted: Apple Pollen Allergen-Squibb; Black Walnut Pollen Allergen-Squibb; Cherry Pollen Allergen-Squibb; Dandelion Pollen Allergen-Squibb. E. R. Squibb & Sons, New York.

Group Allergens Diagnostic-Squibb.—In addition to the Group Allergens Diagnostic-Squibb listed in The Journal, August 4, 1923, p. 393, the following has been accepted: Group Allergens-Squibb Type XXIII (Ash, Cherry, Maple, Oak, Poplar, Willow). E. R. Squibb & Sons, New York (Jour. A. M. R., Sept. 1, 1923, p. 749).

Protein Extracts Diagnostic-P. D. & Co.—In addition to the Protein Extracts Diagnostic-P. D. & Co. listed in The Journal, August 11, 1923, p. 477, the following have been accepted: Goldenrod Pollen Protein Extract Diagnostic-P. D. & Co. and Tobacco Protein Extract Diagnostic-P. D. & Co. Parke, Davis & Co., Detroit.

Thromboplastin-Lederle.—An extract of cattle brain in physiological solution of sodium chlorid prepared according to the method of Hess. For a discussion of the actions, uses and dosage of brain extract see New and Non-official Remedies, 1923, p. 129, under Fibrin Ferment and Thromboplastic Substances. Thromboplastin-Lederle is marketed in 20 c.c. vials which bear an expiration date. Lederle Antitoxin Laboratories, New York (Jour. A. M. A., Sept. 15, 1923, p. 929).

Pollen Allergen Solutions-Squibb.—Solutions containing the sodium chlorid soluble proteins from isolated pollens of various species of plants. For a discussion of the actions, uses and dosage, see Pollen and Epidermal Extract Preparations and Biologically Reactive Food Proteins, New and Non-official Remedies, 1923, p. 234. Pollen allergen solutions-Squibb are intended for the prophylaxis and treatment of hay fever. They are marketed in the following forms: Set A, ten vials containing ten consecutive doses (Nos. 1 to 10); Set B, five vials containing five consecutive doses (Nos. 1 to 5); Set C, five vials containing five consecutive doses (Nos. 6 to 10); Set D, five vials of dose No. 10; Set E, five vials of dose No. 11. The following products have been accepted: Timothy Pollen Allergen Solution-Squibb and Ragweed Pollen Allergen Solution-Squibb. E. R. Squibb & Sons, New York.

Ragweed Pollen Extract-Swan-Meyers.—A liquid obtained by extracting the dried pollen of ragweed with a liquid consisting of 67 per cent glycerin and 33 per cent saturated solution of sodium chlorid. For a discussion of the actions, uses and dosage, see Pollen and Epidermal Extract Preparations and Biologically Reactive Food Proteins, New and Non-official Remedies, 1923, p. 234. The product is marketed in the following forms: Series 1, five vials containing five consecutive doses (Nos. 1 to 5); Series 2, five vials containing five consecutive doses (Nos. 6 to 10); Series 3, five vials containing five consecutive doses (Nos. 11 to 15); Complete Series, fifteen vials containing fifteen consecutive doses (Nos. 1 to 15). Swan-Meyers Co., Indianapolis.

Luminal Tablets, 1/2 grain.—Each contains 1/2 grain luminal (see New and Non-official Remedies, 1923, p. 63). Winthrop Chemical Company, New York.

Malt Extract (Unmedicated)-P. D. & Co.—A preparation essentially similar to extract of malt, U. S. P. (see New and Non-official Remedies, 1923, p. 177), but containing 10 per cent of glycerin. One gm. of the extract converts 5 to

7 gm. of starch to maltose and dextrin in thirty minutes at 40° C. Parke, Davis & Co., Detroit.

Malt Extract with Cod Liver Oil-P. D. & Co.—Each 100 c.c. contains Norwegian cod liver oil, 25 c.c., and malt extract (unmedicated)-P. D. & Co., 75 c.c. Parke, Davis & Co., Detroit.

Argyn Tablets, 6 grains.—Each tablet contains 6 grains argyn (see New and Non-official Remedies, 1923, p. 330). Abbott Laboratories, Chicago.

Tablets Ovarian Substance-Wilson, 2 grains.—Each tablet contains 2 grains ovarian substance-Wilson (see New and Non-official Remedies, 1923, p. 212). Wilson Laboratories, Chicago.

Tablets Ovarian Substance-Wilson, 5 grains.—Each tablet contains 5 grains ovarian substance-Wilson (see New and Non-official Remedies, 1923, p. 212). Wilson Laboratories, Chicago.

Capsules Ovarian Substance-Wilson, 2 grains.—Each capsule contains 2 grains ovarian substance-Wilson (see New and Non-official Remedies, 1923, p. 212). Wilson Laboratories, Chicago.

Capsules Ovarian Substance-Wilson, 5 grains.—Each capsule contains 5 grains ovarian substance-Wilson (see New and Non-official Remedies, 1923, p. 212). Wilson Laboratories, Chicago.

Tablets Ovarian Residue-Wilson, 2 grains.—Each tablet contains 2 grains ovarian residue-Wilson (see New and Non-official Remedies, 1923, p. 212). Wilson Laboratories, Chicago.

Tablets Ovarian Residue-Wilson, 5 grains.—Each tablet contains 5 grains ovarian residue-Wilson (see New and Non-official Remedies, 1923, p. 212). Wilson Laboratories, Chicago.

Capsules Ovarian Residue-Wilson, 5 grains.—Each capsule contains 5 grains Ovarian Residue-Wilson (see New and Non-official Remedies, 1923, p. 212). Wilson Laboratories, Chicago (Jour. A. M. A., Sept. 29, 1923, p. 1113).

PROPAGANDA FOR REFORM

Administration of Insulin.—The present methods of administering insulin parenterally are far from satisfactory. Consequently, the earliest investigators of insulin and other pancreatic preparations attempted to secure physiologic effects by oral administration. There is evidence that slight effects may be obtained when insulin or other pancreatic preparations are introduced into the organism by way of the mouth under certain conditions. On the whole, however, the oral administration of insulin has proven quite inefficient. Rectal administration and nasal insufflation have been tried without success. A recent study showed that pancreatic extracts taken in capsule form by the stomach was not effective in decreasing blood sugar or urinary sugar. It is desirable to give wide publicity to the current limitations of a most promising therapy, since unscrupulous venders are already attempting to distribute just-as-good pancreatic or antidiabetic preparations that are recommended for oral use (Jour. A. M. A., Sept. 1, 1923, p. 752).

El Zair.—This is quackery's latest offer of an elixir of life. The nostrum is brought to the attention of the public by El Zair, Inc., New York. The firm claims that the elixir of youth has at last been found. Much is made of the endorsement which the late W. T. Stead is stated to

have given the nostrum. El Zair is to be dissolved in water and applied by sponging the body with it daily. The A. M. A. Chemical Laboratory analyzed El Zair and reported that essentially it may be considered to consist of one part of glacial acetic acid and three parts of magnesium sulphate (Epsom salt) perfumed with oil of bergamot. The contents of a bottle of El Zair are to be dissolved in a pint of water and, therefore, an essentially similar solution can be made by dissolving 2½ ounces of Epsom salt in a pint of distilled vinegar (Jour. A. M. A., Sept. 1, 1923, p. 768).

Lactic Acid-Producing Organisms and Preparations.—The Council on Pharmacy and Chemistry reports on the present status of sour milk therapy. During recent years reports have been published which indicate that the growth in the intestine of the normally present *Bacillus acidophilus* may be increased so as to make this the predominating organism, by the administration of lactose, by milk fermented with *Bacillus acidophilus*, or by the administration of viable cultures of *Bacillus acidophilus* in conjunction with lactose. Growing out of the claims of favorable therapeutic action, the use of so-called *Bacillus acidophilus* milk and other products prepared with *B. acidophilus* has become quite widespread. While no one subscribes today to the original theories of Metchnikoff, there are many who believe that the regulation of the bacterial flora is of importance. There is evidence that the administration of sour milk is at times beneficial, particularly in pediatrics. A wide clinical observation indicates that for certain types of gastric and intestinal disturbances, fermented milk accomplishes more than unfermented milk (Jour. A. M. A., Sept. 8, 1923, p. 831).

Calcium Chlorid in Hay Fever.—Calcium chlorid seems to be of some use in the treatment of hay fever, but it must be taken in rather large doses during the whole season to be of much benefit—about 1 gm., from four to six times a day. The use of this drug in hay fever is chiefly based on the work of European investigators who have shown that the permeability of the mucous membranes and of the capillaries is decreased by the internal application of calcium chlorid. The treatment is entirely symptomatic, and no permanent relief must be expected (Jour. A. M. A., Sept. 8, 1923, p. 850).

Accidents with Local Anesthetics.—The chairman of the committee for the study of toxic effects of local anesthetics, appointed by the Therapeutic Research Committee of the Council on Pharmacy and Chemistry, publishes a preliminary report. The committee has received reports of forty-two deaths following the use of local anesthetics occurring within the last few years. These accidents have not been reported on by former committees of the association. The deaths reported are:

Anesthetic	Number
Stovain	1
Alypin	1
Procain	3
Apothesin	4
Butyn	4
Butyn and cocain	1
Procain and cocain	10
Cocain	18
Total	42

Under the headings Procain, and Procain and Cocain, novocain is included: one is reported as procain and the other twelve as novocain. As the five deaths following the use of butyn are the first reported, the committee is very desirous of receiving full details of other fatalities for comparison of relative toxicity. These reports should be sent to the chairman of the committee, Emil Mayer, M.D., 40 East Forty-first Street, New York City (Jour. A. M. A., Sept. 15, 1923, p. 947).

Some More Miscellaneous Nostrums.—The following products have been the subject of prosecution by the federal authorities charged with the enforcement of the Food and Drugs Act: Cowan's Rheumatism Herb (Rheumatism Herb Co.), consisting of dried and moldy leaves of a species of eucalyptus. Jad Salts (Wyeth Chemical Co., Detroit, not John Wyeth Bros., Philadelphia), consisting essentially of citric and tartaric acids, salt, baking soda, sodium phosphate and very small amounts of hexamethylenamin, lithium carbonate and potassium bicarbonate. Crane's Quinin and Tar Compound (Crane Medicine Co.), consisting essentially of quinin, sodium salicylate, ammonium chlorid, Epsom salt, oil of anise, tar, menthol, table salt, calcium phosphate, sugar, alcohol and water. Crane's Liver Pills (Crane Medicine Co.), consisting essentially of aloes and magnesium carbonate. Crane's Kidney Pills (Crane Medicine Co.), containing methylene blue, hexamethylenamin, plant extractive and iron sulphate. Tekol (Colonial Tablet Co.), containing ground celery seed and cocoa with about a half grain of caffen in each tablet. Veronica Water (Veronica Medicinal Springs Water Co.), containing magnesium sulphate (Epsom salt), sodium nitrate, sodium chlorid (common salt), calcium bicarbonate, calcium sulphate and magnesium chlorid (Jour. A. M. A., Sept. 15, 1923, p. 946).

So-called "Improved" Ethers.—In 1919 Cotton declared that ethyl ether specially purified was not a good anesthetic, and that real anesthesia could not be obtained unless ether contained some potent synergist. He proposed the use of Cotton Process Ether, which was stated to be ether containing ethylene, carbon dioxid and ethyl alcohol. The manufacturer submitted Cotton Process Ether to the Council on Pharmacy and Chemistry, but, so far, confirmation of Cotton's claims is lacking. Wallis and Hewer, of England, have also recommended a new general anesthetic with the claim that pure ether possesses practically no anesthetic properties, and that their product contains a mixture, in unspecified amounts, of ketones (identified only in vague terms) which have been treated previously with carbon dioxid and ethylene. This product has been placed on the market as "Ethanestal." It has received some endorsement, especially from Dr. H. E. G. Boyle, of London, who made it the subject of addresses on anesthesia in this country. In contradiction of the claims made for Cotton Process Ether and "Ethanestal," Bourne and Stehle showed that ether prepared in a way to exclude impurities possesses the usual anesthetic properties. A painstaking investigation recently reported by Dale, Hadfield and King confirms the generally accepted belief that the anesthetic action of ether is due to the ether itself. They also report their examination of "Ethanestal." They found "Ethanestal" to contain 95.5 per cent ether, 4 per cent normal butyl alcohol, and 0.5

per cent of a mixture of ethyl alcohol and an aldehyd and possibly traces of other substances. The investigation shows that there is no evidence to warrant attributing the anesthetic action of "Ethanestal" to any other constituent than the ether. On the contrary, the work shows that the anesthetic action of ether is improved by purification (Jour. A. M. A., Sept. 22, 1923, p. 1040).

Ethanestal.—In 1921 Dr. H. E. G. Boyle, of London, read a paper before the Section on Miscellaneous Topics at the annual meeting of the American Medical Association. The paper dealt, in part, with so-called improved ether—"Ethanestal." The paper was not published in The Journal A. M. A. on the ground that The Journal does not publish articles on new remedies until those products have been reported on favorably by the Council on Pharmacy and Chemistry. The investigation of "Ethanestal" by Dale, Hadfield and King which makes plain the fallacy of the claims for the product, demonstrates again the advantage to the medical profession of a competent judicial body—the Council on Pharmacy and Chemistry—to investigate new additions to our materia medica (Jour. A. M. A., Sept. 22, 1923, p. 1025).

The Nature of Insulin.—The manufacture of insulin from the pancreas is a costly and laborious undertaking. Therefore, the artificial synthesis is important. Before the prospect of a synthesis can be entertained, however, the chemical structure must be ascertained. Evidence is developing that insulin is protein in nature. Consequently the hope of its isolation as a chemically pure substance becomes slender (Jour. A. M. A., Sept. 29, 1923, p. 1117).

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of May 9, 1923

DR. H. LONGSTREET TAYLOR, Presiding

DR. THEODORE BRATRUD, Warren, gave the following cases:

CASE I. G. C., aged 35, was kicked over the right upper abdomen by a horse at 7 A.M. before having breakfast. He vomited blood twice. Dr. Blegen saw the patient about two hours afterward and had him brought to the hospital. At 11 o'clock the patient showed evidences of shock. He was pale, his hands were cold and his abdomen rigid. Costal breathing. On auscultation of abdomen, no peristaltic waves could be heard. Systolic blood pressure was 120 and diastolic 75. Pulse 80. Mucous membranc was pale. He was very tender over the liver.

A diagnosis of hemorrhage from rupture of the liver was made.

On opening the abdomen, no free blood was found in the abdomen. A slight amount of blood-tinged serum was noted. The transverse mesocolon presented a peculiar appearance. It was very much thickened and red. On introducing the hand into the abdomen a soft mass was felt over the region of the right kidney, which was first thought to be a crushed kidney with a hematoma. On further examination the kidney was identified below the mass. The upper leaf of the transverse meso-colon was opened

and clotted blood was removed, showing the pancreas exposed, and three bleeding points were found actively bleeding in the angle between the pancreas and the third portion of the duodenum. These were ligated. The patient was given hypodermoclysis. He reacted nicely and made an uninterrupted recovery.

CASE 2. F. G., aged 31, came to Warren Hospital at 2 P.M. on August 3, 1922, with history as follows:

Pleurisy three years ago, from which he made a good recovery. At noon, he was kicked in the abdomen by a horse. He fell down but did not lose consciousness. In half an hour he began to feel cramps which increased in severity. He did not vomit but felt dizzy. Was seen at Warren Hospital at 2 P.M. and at that time he was pale and was suffering a great deal of pain, paroxysmal in character. His extremities were cold and the abdomen rigid. There was tenderness over the whole abdomen and left loin. Blood pressure 108/60. He was given $\frac{1}{4}$ gr. of morphin and atropin. He passed four ounces of very dark colored urine containing clots.

Patient was taken to the operating room at once. A Kocher kidney incision revealed a kidney split transversely into two parts completely and fissured otherwise. About one pint of blood had formed around the kidney. The kidney remains were removed and hemorrhage controlled. The peritoneum was incised at the anterior end of the kidney incision, and blood clot was found in the peritoneal cavity. The spleen was found split in three pieces. All vessels were ligated and the lacerated spleen removed. The patient was given 500 c.c. of glucose solution intravenously on the operating table. Blood pressure after operation was 120. Patient made an uninterrupted recovery.

On September 7, five weeks after the injury, his hemoglobin was 88, r.b.c. 4,250,000; leucocytes 14,900; small lymphocytes 25, large lymphocytes 23, and eosinophiles $2\frac{1}{2}$.

On April 27, 1923, his white count was 8,500, polynuclears 73, small lymphocytes 17, large lymphocytes 7, and eosinophiles 1.

DR. W. F. BRAASCH, Rochester, reported the following case:

L. H., age 39, married; occupation, pressman. Family and marital history essentially negative. Typhoid fever in 1905; pneumonia in 1918.

Chief complaint—pain in left upper abdomen. General health always good. In last five or six years had complained of pain referred to left upper abdomen which radiated into loin. Pains have become gradually more frequent, so that during the past year they occur almost daily. No accompanying urinary symptoms, no downward radiation. Pain accompanied by nausea and vomiting when severe. Patient has seen ten different physicians in the last two years, with that many different methods of treatment, and without avail.

First examination in October, 1922. Weight normal—150 pounds; blood pressure 120/72. Physical examination negative.

Urinalysis: amount 1,000 c.c., specific gravity 1018, acid reaction, albumin 2, sugar 0, pus cells varying from 2 to 30

cells to a field, occasional red blood cell. Two-hour phthalein 50 per cent.

Tonsils small with some fluid pus.

X-ray of colon and chest negative. X-ray of urinary tract showed a shadow 1 cm. in diameter in left kidney area.

Cystoscopic examination showed bladder to be normal. Negative urine catheterized from both kidneys. Differential phthalein test showed appearance in four minutes from both kidneys, 15 per cent from left, 15 per cent from right, in fifteen minutes. Pyelogram showed a normal pelvis and ureter, save for the fact that the upper calices seemed to be obliterated. Original shadow was apparently outside of kidney, since it was lateral to upper calices.

Diagnosis: Neuromuscular pains. Shadow in left renal area probably extrarenal. Tonsillectomy advised, which was done. Patient returned to his home.

Patient returned April, 1923, with a history of continued pain in upper left abdomen and loin. Since the last visit pain has become more frequent and more severe. A cough or sudden jar seems to start the pain. A week before coming he had a severe chill together with fever. He noted that the urine contained sediment.

Urinalysis now is much the same as before, only the urine contains a large amount of pus, which was stained for tubercle bacilli, but found negative.

X-ray shadow remains as before. In the roentgenogram now taken the shadow remains much the same.

On cystoscopic examination there was a slight cystitis. Urine catheterized from left kidney showed much pus. In spite of this the function of the kidney remained practically normal.

Diagnosis now: Cortical stone (?), with pyelonephritis. Operation advised.

At operation, a cystic mass about the size of a small orange, involving the upper third of the kidney, was found. Remaining two-thirds of the kidney appeared normal. On section an encapsulated cyst was found, containing about two ounces of greenish pus, in the center of which lay the stone. It was surrounded by a capsule of inflammatory tissue about 1 cm. in thickness. Did not appear to be any gross connection with the pelvis, which was slightly thicker than normal. Cyst could best be explained by a calyx which became blocked by the stone with resulting dilatation, subsequent encapsulation and infection.

The kidney was removed and the specimen is here for your inspection.

DR. ARTHUR N. COLLINS, Duluth, gave the following case report:

I desire to report the case of a man of 59, a native American, carpenter by occupation, who came under my observation January 12, 1923. The family history is negative except for the mother, who died at 46 of "stomach trouble," possibly cancer. The patient was always well as a child and large and strong through the rest of his life up to about three years ago. No particular complaint during the three years except that he was not so strong as usual, that he worked indoors where coal gases were in the air a good deal one year ago, and about three months previous to January 12, he noticed a hard lump in his left abdomen and this seemed to be growing larger. He is constipated,

the bowels requiring a laxative practically every day. He cannot seem to defecate unless the stools are thin. No blood in the stool. He has no pain in this region. He has had night frequency for ten or fifteen years but this has been worse lately—three or four times at night. No pain on urination; no blood. The lump he complains of is in the left flank and “pushes up” toward his ribs. He has lost some weight. His best weight was 190 at the age of 23; his average weight has been between 172 and 175. Last November the weight was 158 and in three weeks it was down to 142. At present he weighs 155.

Examination: A large man, six feet tall, large boned, large hands. Eyes gray, tongue clean except slight coat at the back; mucous membranes good color. No general adenopathy; no signs of marked or rapid loss of weight. Breath sounds seem normal and the heart is regular, rate about 72 and no murmurs or other abnormal sounds heard. In the abdomen there are no muscle spasms or tenderness and palpation is reasonably easy; in the left side of the abdomen, however, beginning above the left costal margin and extending down to the iliac crest there is dullness and this extends around into the left lumbar region. On palpation there is a hard mass in the region of dullness extending pretty well over to the midline above and sloping over laterally and downward toward the ilium. A notch can be felt indistinctly in the edge toward its upper part. No tenderness of consequence on palpation. The mass is not movable, or only slightly so. The urine is negative. Blood pressure 130/80. The blood examination showed the red count 3,040,000, the hb. 55 per cent, and the white count 345,000 on the first examination. The differential count showed polys. 39 per cent; large lymphocytes 46 per cent; myelocytes 8 per cent; basophiles 5 per cent; eosinophiles 1 per cent; 5 normoblasts and 1 megaloblast. Here we have a pretty fair anemia and a high white count with a large number of myelocytes (about 27,600). A diagnosis of splenomyelogenous leukemia was made and x-ray treatments ordered. The table of treatments and white counts and dates follows:

Jan. 12.....	345,000	day of first examination
“ 15.....	460,000	treatment
“ 17.....	410,000	“
“ 19.....	358,000	“
“ 22.....	280,000	“
“ 27.....	268,000	no “
“ 31.....	314,000	no “
Feb. 5.....	272,500	“
“ 9.....	176,000	“
“ 15.....	159,000	“
“ 26.....	147,000	“
Mar. 2.....	93,000	no “
“ 5.....	76,000	no “
“ 10.....	64,000	“
“ 17.....	43,000	no “ R.B.C. 4,360,000
Apr. 7.....	34,000	no “

With the decrease in the white counts the size of the spleen was steadily smaller, until on April 23rd the spleen could be percussed and the edge felt at the costal border. The skin was bronzed over the area where the x-ray treatments had been given in spite of filtration of the rays. The hemoglobin had also risen to about 80% and the red

count to 4,360,000 and he felt distinctly better and stronger.

In reading over Dr. W. J. Mayo's report in the Illinois Medical Journal of March, 1922, I learned that at Rochester they had splenectomized twenty-nine patients for splenomyelogenous leukemia after the white counts had been reduced. Seven were known to be alive and in good condition more than three years following operation; four, more than four years; and one, more than five years. The ordinary duration of this disease without surgery is from two to three years. There are acute cases which terminate more precipitately.

These conditions were thoroughly explained to this patient and after giving the matter some thought he elected to have his spleen removed. This was done April 25, 1923. The findings were not remarkable at operation and the spleen was easily removed. Fortunately he had a smooth convalescence, the wound healing per primam, and with very little, if any, gastrointestinal post-operative discomfort. He left the hospital on the fourteenth day following operation.

On the day before operation the hemoglobin was 80 per cent, the red count 4,200,000, and the white count 27,500 and the myelocytes 13 per cent. Three days after splenectomy the myelocytes were 3 per cent. Fourteen days after operation the red count was 4,400,000, the white count 38,800, and no myelocytes seen.

The spleen, which is approximately about one-third of the size before x-ray treatments were begun, is being passed around for your inspection.

Discussion: DR. H. B. SWEETSER, Minneapolis: In myelogenous leukemia, with x-ray or radium, you can reduce the number of white blood cells, and if you give it frequently enough you will reduce them so low that the patient will die for lack of them. We had a patient about two years ago who had a large spleen and about 200,000 w.b.c., and we gave her, I think, three treatments of radium about three weeks apart. The spleen, which was very large, disappeared on palpation or percussion. The white count went down to about 8,000. She got entirely well and went back to her occupation and remained entirely well for one year. Then the spleen became perceptible again on percussion; then became palpable, and the white count went up, but not so much—I think to about 100,000. After thinking the case over carefully we applied radium again and then the spleen rapidly became small again; the white count went down to about 4,000, and she began to bleed. She bled from the nose, vagina, rectum and under the skin. We transfused her, gave her whole blood under the skin, but she went down right along and died in a short time. Her spleen did not again enlarge so that, apparently, the radium resulted very much as if a splenectomy had been done. Apparently the radium had destroyed practically all of the spleen tissue.

It will be of interest to know what will happen to Dr. Collins' patient in the next year, and I hope that he will report to us later as to the result.

Meeting of Sept. 19, 1923

The annual meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, Sept. 19, 1923, with the President, Dr. H. L.

Taylor, in the chair. There were thirty-three members and three visitors present.

After the reading of the Secretary's and Treasurer's reports the following officers were elected for the ensuing year:

President—Dr. Arthur S. Hamilton, Minneapolis.

Vice President—Dr. H. P. Ritchie, Saint Paul.

Secretary-Treasurer—Dr. John E. Hynes, Minneapolis.

Dr. H. L. Taylor, the retiring President, then read his address entitled, "Tuberculosis in Man" (page 616).

Upon motion the meeting adjourned.

JOHN E. HYNES,
Secretary.

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

Stated Meeting Held October 4, 1923, the President,
J. M. Hayes, in the Chair
INTESTINAL OBSTRUCTION

DR. ZIEROLD: I am presenting this paper not because intestinal obstruction in itself is unusual, but rather because of the unique circumstances surrounding it and because of an unusual termination.

This patient is twenty-two years old, and has the following history: In 1921 she had an appendectomy at this hospital with an uneventful convalescence. On January 1, 1922, she was admitted here with some indefinite complaints and wished an operation for the freeing of adhesions. An operation was not advised at that time, and she was discharged. In February, 1922, she was operated on elsewhere for adhesions; and in March, 1922, she was operated at the same hospital for intestinal obstruction. At this time a resection was done. In May, 1922, she was again operated for intestinal obstruction at the same hospital and again in October of the same year. In February, 1923, the patient was admitted to this hospital with a partial obstruction or at least with symptoms that led to that belief. At this time she was observed but not operated, and was discharged soon afterward. On March 8, 1923, she was readmitted to this hospital and operated on for intestinal obstruction. Subsequently she passed a rather uneventful period until she was admitted here on September 26, with all the evidence of an obstruction. She had a history of constipation over a period of three days, passage of no gas or fecal material by rectum, nausea and vomiting, no food intake for a day and a half, and no result with repeated enemas.

On physical examination the patient was in fair condition, pulse not apparently accelerated and the volume good. The abdomen was somewhat distended and somewhat tender. That same evening surgery was advised on the basis of an intestinal obstruction. This presented some technical difficulties because at this time after a series of operations there was hardly a place left where I could get in without going through some old scarred operative field. From the sequence of events and from her appearance my impression was that the obstruction was somewhere in the lower bowel and I made the incision not by choice but by necessity; the only open space being in the right rectus.

On gaining entrance to the peritoneal cavity the viscera presented as a mass adherent one to the other and indistinguishable. By sharp dissection a distended cecum was with difficulty identified at the ileocecal valve and also what appeared to be a point of anastomosis between the large and small bowel. I attempted to explore the other side of the abdomen and identify the structures there and I was able to identify what I believed to be a collapsed pelvic colon. This I concluded to be the region of the obstruction but could not free the adhesions sufficiently well to satisfy myself that it had been relieved. The patient had about all the operating that she would stand at that time so I brought the cecum up, did a cecostomy with a Paul tube, to give her immediate relief. Since this time she has progressed nicely.

There is still some question in my mind as to whether the obstruction was completely removed. The immediate emergency of course has been passed, but what final operative procedure will be necessary I am not at present in a position to state. We will attempt a closure of the cecostomy as she says she has been getting some gas through by rectum.

There is yet another finding in this case which of course should have been emphasized at the outset but which I have reserved until the patient was removed. On opening the abdomen there were multiple nodules of various sizes scattered over the peritoneal surface and over the intestinal coils. They were hard, irregular and rather of a yellowish-gray texture and a few infiltrated the scarred abdominal fascia. In the face of these findings we had the impression that the primary cause of obstruction arose in the pelvis. Specimens were taken, and sections of these nodules showed as we expected and as we concluded at the time, adeno-carcinoma.

DR. ABBOTT: There is no record of the condition each time and what was done each time? How many operations in all?

DR. ZIEROLD: She had had four previous operations.

DR. SWEETZER: There was no fluid in the abdomen?

DR. ZIEROLD: There was a small amount of encysted fluid in the right iliac fossa.

DR. ABBOTT: Did the pictures show anything?

DR. ZIEROLD: We took no x-rays at this time, Dr. Abbott, inasmuch as she was admitted in the evening, and the amount of time that would elapse in getting our patient to the x-ray we thought would jeopardize her unnecessarily—although probably there was no reason why it could not have been done. I am sorry we cannot offer the previous operative records. Dr. Watson has been trying to complete the record but as yet we have no complete detailed report.

DR. MANN: I have seen a number of cases of these carcinomata of the ovary. We very often find them scattered through the peritoneum, but sometimes they are in large localized masses, and a great many of them do clear up when the original tumor is removed. I had one that was especially interesting to me. She was in this hospital, too, when I first saw her. She had a history of having had some sort of tumor removed by Dr. Rothrock, of St. Paul, and her left ovary was gone. I could just feel something which I thought was the stump of the pedicle and I watched that for a long time. That never changed its

size, but when I first saw her she had abdominal ascites—that's what she came in for five years ago. I could feel a moderate mass in the upper left abdomen and she had some trouble with the bowels. Then she came back to me about a year later. So then I opened her up, and this mass was a secondary mass in the omentum. I felt that little stub; that had not grown; but she had a row of five enlargements along the mesentery and right in the mid-line of the root of the mesentery of the small bowel. She didn't want any operations, but I had finally persuaded her to have an umbilical hernia repaired under local, and let me feel through the opening. The root of the mesentery of the small bowel was involved, almost the entire length to the transverse colon; so that to remove that would have interfered so much with the small bowel that I felt it would be unsafe. There were rounded elevations about the size of very large marbles—a row of five of them. One of them was sticking out, actively growing, of cauliflower type about 2x4.5 cm. I took that off the best I could. Then these others were cysts just like ovarian cysts. I opened all of those and then pulled their linings out as well as I could. That's all I did, and she is still living and fairly well. All this is about four or five years since my operation. Dr. Rothrock had operated on her one or two years before I saw her first. So that the malignancy of these papillary cysts is not as great as you might think. There are any number of these cases of so-called malignant papillary-cystadenomas in which the original tumor has been removed and nothing else has been done, and patients very commonly have gotten well. So that if this is a tumor of the ovary and the ovary has not been removed you may get a chance to take out that original one and let these others go down themselves.

CASE OF UNI-LATERAL EXOPHTHALMOS

DR. A. BRATRUD: Miss E. L., age 16, female, single, American, school-girl.

F. H. Father living and well. Mother dead, age 42, influenza. Four sisters, living and well.

P. H. No previous illness.

M. H. Menses, age 14, regular every 25 days; duration 4 days; pre-menstrual cramps, severity 2 to 3. L. P. 6-15-23.

Chief Complaint. Headache. Bulging right eye.

C. H. During the past two months patient has had a headache confined mostly to region of top and back of head. Occurs twice a month lasting from one-half to one day. Notices slight headache after prolonged reading or studying. During the past four months right eye has been bulging. Friends called her attention to this condition, telling her that it was becoming worse. Sisters state that she has been "cross-eyed" for several years. Father states that the condition has existed since birth, which was entirely normal. Also states that it may be slightly larger the past two months.

Appetite good. Bowels regular. Urine normal. No gastric disturbance. No dizziness, ringing or buzzing in ears, no nervousness. No palpitation of heart. Sleep good. Does not tire easily. Has had a goiter for two years. No loss of weight.

Physical Findings. Height 5 feet 4 inches. Weight 134 pounds. No asymmetry of face. Exophthalmos of right side

quite marked, the right eye protruding 4 mm. closer to lens of glasses than the right eye. No pulsation. Eyes not tender to pressure. Von Graefe negative. Dalrymple sign negative. Moebius sign negative. Nose normal, except slight deviation of bridge to the right. Mouth and throat normal. Neck reveals a goiter of moderate size with a rather hard mass in upper pole of right lobe. The growth is confined mostly to the upper lobe. No bruit in thyroid or temporal regions. Optic findings show optic discs to be normal. There is one degree of hyperopia present in both eyes. No pulsation present.

Basal metabolic rate, minus 1 per cent. Wassermann, negative. Blood pressure, 118/70. Pulse, 74. Blood and urine, normal.

Sept. 5, 1923. X-ray examination of the right orbit for protruding eye: Sella appears to be normal in size and contour. Sphenoidal sinus nearly normal, possibly narrowed in its transverse diameter. Orbit appears normal. There is a slight suggestion of an irregular growth in the posterior orbit. Definition not positive enough for definite conclusion.

Oct. 6, 1923. This examination of skull shows less definition at the posterior sella, the outlines both of the sella and posterior wall being extremely thin. The orbit shows no appreciable change.

Oct. 4, 1923. Headache improved since wearing glasses. No change in right eye. Physical findings show no changes except that goiter may be softer. No diagnosis has yet been made in this case as there is no history of injury. No pulsation in the eye or eyelids and no bruit in the temporal region.

Orbital cellulitis and orbital periostitis can be excluded by the fact that there are no local or general symptoms or signs of acute or chronic inflammation or infection. This also excludes cavernous sinus thrombosis.

There is no history of lues in the family and a negative Wassermann associated with all negative findings for lues practically excludes gumma in this region.

The principal conditions to be seriously considered here are new growths, i.e., ivory exostosis of orbital plates; growths within accessory sinuses of the nose causing distention of these; meningocele and encephalocele; new growths posterior to the eyeball; hernia in Tenon's capsule and exophthalmic goiter.

X-ray plates are being taken at regular intervals with the view that if any bony growth is present it will soon show in a series of plates, as will also any change in the accessory sinuses of the nose. The only certain method of diagnosing encephalocele or meningocele is by exploratory puncture. They can sometimes be diminished in size by pressure and at times pulsate in association with respiratory and arterial oscillations. At present there are no signs of hyperthyroidism; although the exophthalmos is bilateral in most cases of hyperthyroidism, it may be unilateral, slightly greater in one eye than in the other, and vary in degree at different times. When unilateral it usually corresponds to the side on which the enlargement of the thyroid is present. Exophthalmos may be present for years before other symptoms of the complex are present and yet it may appear even in the course of 24 hours.

OPINION. The evidence at present in this case does not

point to this as being a thyroid condition. It appears to me that this condition has existed for years, and may be a result of traumatism during birth. New growth must be seriously considered from history, as obtained from sisters and friends. This case will be watched, and if any definite diagnosis or any change is noticed it will be again reported.

DR. ABBOTT: Does she seem abnormal?

DR. BRATRUD: No, there is nothing in the findings at all. All these findings are negative. There is only one thing. I think we can throw out everything else entirely. Dr. Donaldson thought there might be something suggested here in the orbital plate. I think it comes down simply to something around the orbital plate, or something posterior to that, something that may be pressing out.

DR. MANN: Did I understand you to say that exophthalmos may be present without a goiter?

DR. BRATRUD: Yes, Barker states that you may have an exophthalmos before you have any of the symptom complex of an exophthalmic goiter. He also states—which I didn't know before—that you may get a unilateral exophthalmos with the exophthalmos on the side in which the adenoma is present. I have never seen it myself.

DR. MANN: What does he state causes the exophthalmos?

DR. BRATRUD: Well, the action of the smooth muscle cells in the eyeball—the retraction of the eyelids and the action of the smooth muscles of the eyeball itself.

DR. MANN: This exophthalmos, did you consider to be the pressure on the sympathetic nervous system?

DR. BRATRUD: Well, as I understand it, the exophthalmos has not been correctly explained. It is just a theory.

DR. MANN: Well, have you noticed that this girl has an asymmetry of the head, that that side of her head is forward?

DR. BRATRUD: I didn't notice that.

DR. MANN: I think there is an asymmetry of the whole head. The left side of the face is back; the right side is forward; the left side of the forehead is back further than the right; and she has a peculiar cast to the eye. It didn't seem to me as though she had much exophthalmos. She may have some. The first point I noticed was that the pulse was practically normal, as it was given, and no nervous symptoms and so on. So that we would hardly expect an exophthalmos so soon from an exophthalmic goiter type. Could that be one of the early signs? You would hardly expect an exophthalmic manifestation from that. I have nothing further than the fact that she has an asymmetry of the head itself; and if the father says that that eye bulged at birth that is almost an explanation of the eye part of it, because it does not project very far now, it seemed to me as I looked at her.

DR. ZIEROLD: I am very glad Dr. Mann has mentioned the matter of asymmetry. It occurred to me, not through any particular keenness of observation, but perhaps because a case of hypertrophy or congenital asymmetry presented itself in this hospital a very short time ago. In view of the father's statement of exophthalmos being present at birth and in the absence of other symptoms and particularly with no widening of the lid slit, it seems quite reasonable to consider this purely as a developmental anomaly.

DR. WEBB: I recall a case of unilateral exophthalmos which occurred during my hospital service. Patient was an actress who had been on a drinking party the night before. She came in to the out-patient department on a Sunday afternoon complaining of a headache which she attributed to something she drank. There was a slight difference in the size and reaction of the pupils and she was persuaded to remain in the hospital for further study. She was found to have a positive Wassermann. The interesting point is that she developed a unilateral exophthalmos while in the hospital. It resisted the most active treatment of salvarsan and other antisyphilitic remedies and finally after two years of treatment a diagnosis of aneurysm of an artery within the orbital cavity was considered. The patient was very anxious to gain relief at any cost and finally a ligation of the carotid artery on that side was performed. This was followed by some relief but she was lost sight of and I do not know the ultimate outcome.

DR. R. C. Webb read a paper on the Gibson Rubber Dam Tampon in Acute Appendicitis. (See page 632.)

DR. MACLAREN, St. Paul (speaking by invitation): I am very glad indeed of the opportunity to talk on this subject. I have been extremely interested along this line and I have been fortunate enough to see a number of these cases that Dr. Webb has treated at the University Hospital. The mortality of acute appendicitis is usually so confused with innocent cases that nobody knows just what the mortality of acute appendicitis is; but the mortality of the worst types of appendicitis is still very great. I can hardly tell from my own records what my mortality is. My records contain a history of every case I ever operated on; but I cannot tell on looking back which were the really desperate cases. They are all mixed in with a lot of innocent cases. And still my mortality when I come to look it up as I did a few years ago was amazingly high on the worst type of acute appendicitis.

Now there are so many angles to this subject and we have all talked and I have talked as though I knew what the Gibson drain was. I really didn't until I saw Dr. Webb use it. Within this last summer I lost a very dear friend whom I had operated upon for what I thought was not a very serious acute appendicitis; and that also stimulated my interest. I know that I have myself and allowed my assistants to sew up too many of these. We like to sew up everything. The first thing that we do in many cases that come to us from someone else in railroad surgery is to take out the stitches. They ought not to be sewed up; they ought to be left open. I approach this in the line of cases that have vomited themselves open and my statistics of some four thousand laparotomies show that one in three hundred either coughed or vomited their wounds open and they still do. And in other people's hands too; I see them at the University Hospital where there is no question about their being well taken care of. Now when a patient vomits or coughs his wound open what are you going to do with it? You can sew them up, and a good many of them will get well. Some of them won't.

When a woman came to me a number of years ago and told me that she had coughed her wound open, and that Dr. Andrews, of Mankato, had not sewed her up, I said, "I don't think it is possible!" Here she had a perfectly

beautiful wound, a wound as pretty as any abdominal wound that anyone ever sewed up. I wrote to Andrews. I thought the woman didn't know what she was talking about. He told me that that had been his custom for some time, just to wash off the intestine; and I have seen the intestine come out with the figure of eight silk worm gut stitches. Any form of stitching will not absolutely prevent this action. Now when you wash off the intestine, push it back and simply strap the wound, it is amazing what a good strong abdominal wound you will get where there has been no secondary stitching, where the stitches were all taken out at the time of the accident and edges brought together with adhesive plaster.

That led me to try—in bad, fat distended abdomens—leaving the wound wide open and simply strapping it. One of the worst cases that I saw, a neglected case, a woman who had a general septic peritonitis, where I simply opened the abdomen and fished out the appendix and didn't put the Gibson drain in as I would today; and strapped her, put a drain or two in—the wound healed and afterwards went through the Mayo Clinic and was not recognized as a hernia. She had a small hernia but it was unimportant. Here she was, a woman that weighed three hundred pounds, with a tremendously big, distended abdomen, and she never had any stitching at all.

Now Dr. Webb brings out a point which I think is very, very important. You stitch these wounds up and you get sloughing of the fascia; and when you get sloughing of fascia you are sure to get a post-operative hernia. Post-operative hernias are occurring all the time in the hands of the best operators just because of the sloughing which occurs underneath—and without it, apparently, sometimes.

I am glad to have heard this paper again, because you read these things and they don't really get home to you. They don't to me. They have to be pounded into me. I really didn't know how until now—I put a Gibson drain in two or three days ago into a very bad large abscess, and I didn't buttonhole it. I think the woman is getting well, getting along all right. I don't know how much influence the buttonholing has. I think the drainage comes on the outside of the tampon, and the value of the tampon is to prevent the intestine from coming into the wide open wound. I am going to use it a great deal more than I ever did before, if I have a chance.

DR. MACFARLANE (speaking by invitation): I don't know as I can add anything to what Dr. Webb has said, except that I didn't have to see very many of these cases to approve of it very much. Until Dr. Webb demonstrated this method of drainage, I didn't understand it. At the University Hospital all our cases were drained through the wound itself or through a stab wound; and it wasn't at all unusual in the bad cases to see pus dissecting back and forth, four or five ways on each side, and occasionally the wounds break down entirely; and we have to take out stitches and take out necrotic fascia; and those cases go on and drain for weeks and weeks. It is a different picture in these cases. Even at the end of five days when you take out your drain, the wound is walled off and it has its complete original thickness. Since this paper was written I have seen two more cases at the University Hospital. Practically all the men are using this drain there now in the

bad cases. One of those cases went home today. The drains had been in about five days. At the end of that time we took the drains out completely and strapped the wound with adhesive; and at the end of about three weeks now, that wound is healed solid.

DR. SWEETSER: Of course it is not understood that other methods of drainage might not be efficient. If that were so, there are so many cases that we all see and operate on; and we don't have hernias. Not more than one-fifth of the cases here are followed by hernias. What I am getting at is that this is not a panacea against bad results. Twelve per cent, I think, died from this. I was sorry that Dr. MacLaren didn't mention the method of treatment of appendicitis of which he was the originator—draining these things through the rectum. We have had several cases—and I am very thankful to Dr. MacLaren for calling our attention to them—cases which I am sure would have died if we had opened the abdomen. Then there is another series of cases where the pus had run up outside of the cecum, and I think had to be drained by a stab wound posteriorly. I am keenly interested in this drain. If it will prevent necrosis of the theca, then it is the best kind of drain we have. I was always under the impression that the softening of the edges of the theca was the result of the infection and not the result of tension, because sometimes we have had to leave wounds more or less open and nevertheless I have thought that I got a sloughing of the edges of the theca. If this Gibson drain will prevent that, then it is the very best method of taking care of this very bad problem.

DR. ABBOTT: Probably in view of the fact that we have so many bad cases of appendicitis, it is one of the most important questions that come up, how we should drain these cases. I believe we ought to throw all prejudice aside absolutely, and look at each one with an open mind. Now we have here in this society a large number of men that are getting these cases right along all the time. Why wouldn't it be a good plan for us to take a series of cases, for instance beginning now, and keep an accurate account of just the condition that we find in the patient; the patient's general condition, the condition of the appendix, the condition of the abdomen at the time it was opened, the exact method of dealing with each case; then perhaps after six months get together again and compare notes. In doing the other way, the way that is generally done—for instance, in the Western Surgical at our last meeting a gentleman read a paper on an extensive series of bad appendices with general infection of the abdomen. These cases he had operated and closed without drainage. He was a strong advocate of not draining any cases. That brings us, you see, right to a wall. He had a series of two or three or four hundred cases and a remarkably low mortality, and he drained practically none of it. He said now that he was closing them up absolutely and not draining a thing. On the other hand, we are getting good results by draining. A great many are reporting these cases, as you have seen tonight, and this method appears favorable. Now the question is: Is either side right? Are we exactly right? I believe that that way of getting together and comparing notes will be a better way than to depend on one man's successes.

DR. MACLAREN: I would like to say a word or two more. Dr. Sweetzer has been kind enough to give me credit for being the originator of rectal drainage, but it was not original on my part. A doctor in Brooklyn has suggested it. Now I don't believe that Dr. Abbott believes—and I don't believe that any of us believes that a general septic peritonitis is going to get well if we do not open it. I do not believe that we are talking about the same kind of cases when he says that men open them and sew the wall up. I can't see how it is possible to explain the recovery of some of these bad acute septic peritonitis cases without helping nature just as much as we possibly can. We all see the worst types occasionally—they are not very frequent. An ordinary acute appendix, because it is gangrenous and because it has a little pus around it—that is not the type we are trying to get at. I think we are talking of the neglected cases; and there is where the drainage comes in, after your operation. I have done it most of the time on my own cases. When you see a patient is not going to get well, and when he is dragging along, very, very desperately sick, and you feel a bulging along the wall of the abdomen—I don't think these are the kind to which he is referring. A child will come in with a neglected general septic peritonitis which has localized down in the pelvis and you have an abscess. Then the first step is not to open the abdomen but to let out the pus through the rectum and in a day or so go ahead and do something else; because some children that I did that to died in spite of my rectal drainage, when I had not gotten the appendix.

As I say, the cases that I here meant and that brought this drainage home to me are my own cases. One of them did die and I made a post-mortem on him; and others that I felt sure were going to die, and that had a perfectly remarkable, wonderful recovery, with gradual drainage of the wound. Stanley Spillman told me that he had to supplement vaginal drainage; he had to sometimes drain the women through the rectum, besides the vaginal drainage. I can't see why you don't get to the bottom of the pit when you go up from below, but you apparently do not.

DR. ABBOTT: Just one word to put myself right with Dr. MacLaren. I want to be all right with him anyway. I am not taking either side. I am merely citing this man as being on one side. I have an open mind about it. I am willing to adopt the best thing, and I want to adopt the best thing. That is why I am interested in it. But speaking of drainage, the reasons that this gentleman gave for not draining are these: He cited a great many cases of general peritonitis accompanying acute appendicitis, and then he reasoned that you can put in a drain if you like and get the drainage from that area; but you do not get the drainage from the rest of the intestinal tract. That was his argument. Now that is as much as I know about it. We have all tried it, and we have all our own impressions; but I believe it would be a good thing to get up a good system of co-operation.

DR. MACLAREN: Now, Dr. Abbott, I have drained a man six or seven times, in six or seven places, and still had him die from general septic peritonitis—rectal drainage, both loins and both kidneys—and still the abscess formation going on in some of these cases. You can't get ahead of it.

The man dies and you make a post-mortem and there is still another abscess that you could not reach.

DR. BRATRUD: I think that a good deal of this question of drainage comes right back to a question of infection in the wound. Everybody will agree that those wounds do not become infected like the wounds that have been closed. We did a hysterectomy and appendectomy on the same woman, and four days later the case died. We hadn't even looked at the wound. We opened up the abdomen and the wound was infected. We examined it, and the abdominal cavity was absolutely clean. I think a good deal of these are the results of some of these infections in the abdominal wall, more from the infection of the wound than from the infection of the peritoneal cavity.

DR. WEBB: I wish to thank the members for this very interesting discussion. It is to be expected that there will be some difference of opinion inasmuch as all have had very serious cases with a satisfactory outcome. We immediately come back to the old question, how long does a drain drain when inserted in the peritoneal cavity? In a very few hours it is surrounded by fibrinous adhesions and it drains only the surface in immediate contact with its surface. With the tampon properly inserted the maximum portion of the abscess cavity and the infected area in the peritoneal cavity is in contact with the drain and as a result there is maximum output of toxic material. There is a tremendous purulent discharge in all of these patients during the first eight days. If this material is allowed to escape through the wound rather than through the ordinary excretory channels it is reasonable to expect a more rapid clearing of the evidence of general sepsis and such is the case clinically. It is difficult to compare results in patients of this type but I hope that some of you will try the Gibson tampon in your next serious case and carefully observe the progress. Of course some of them will not recover. I recall one of the twenty cases included in the deaths reported by C. E. Farr, of New York. The patient was moribund when operated upon and died three hours after operation. We were fortunate that she did not die on the table, but we could not refuse to operate.

As to the question of closure of such cases without drainage. It is well known that cases of perforated gastric ulcer can be thoroughly aspirated, the perforation closed and the abdomen closed without drainage. On the other hand some cases of appendicitis have sufficient resisting power to form abscesses and finally result in absorption of the abscess. We also know, and we learned rapidly during the war, that in infected wounds in other parts of the body it was essential to have wide open drainage and that it was well to open the wound about one-third more than seemed necessary at the time of operating in order that one might provide against the swelling which takes place about an infected wound and which interferes with drainage. The Gibson tampon approaches wide open drainage as nearly as is possible in the abdominal cavity.

As to infection of the wound. It is very rare that there is any evidence of wound infection due to the perfect drainage afforded by the numerous folds in the rubber dam tampon. If one is careful not to clean the fascia and thus deprive it of its blood supply there will be little opportunity left for possible pockets for the pus. With the ordinary

method of suturing the layers of the abdominal wall it is impossible to prevent a possible pocketing along both the upper and lower surfaces of each layer sutured. When such a case does become infected and the fascia sloughs we endeavor to hasten healing by cutting away the necrotic fascia. It usually results in a sloughing of an oval area of fascia leaving a gap which is bridged by scar tissue. If a hernia occurs the ease of repair is directly dependent on the amount of destruction of fascia.

DR. SWEETSER: Do I understand you then, Dr. Webb, to say that there is no necrosis of the theca in these cases that are left wide open?

DR. WEBB: There was no necrosis in the four cases which I reported. However, in the one hundred and sixty-two cases reported from Dr. Gibson's service there was very slight necrosis in a very few of the cases.

PROGRESS

Abstracts to be submitted to Section Supervisors.

MEDICINE

SUPERVISORS:

F. J. HIRSCHBOECK,
FIDELITY BLDG., DULUTH
THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

THE PRESENCE OF BACTERIA IN THE LUNGS OF MICE AFTER INHALATION: Ernest G. Stillman (Jour. of Exp. Med., Aug. 1, 1923). The author caused mice to inhale an atmosphere in which a fine mist had been produced by spraying a culture of various organisms (pneumococcus, streptococcus hemolyticus, bacillus influenzae, staphylococcus); 10-15 c.c. of broth cultures were used and the spray continued for 10 to 15 minutes. The mice were removed and killed at varying intervals. Precautions were taken to prevent aspiration at the time of death and other sterile precautions used. Cultures were made from the heart's blood, the spleen and the lungs. It was found that under such circumstances the bacteria readily penetrated into the lower respiratory tract. Pneumococci were found to usually disappear within a few hours and give rise to no infection. Hemolytic streptococci persisted for a considerable length of time and a general septicemia usually followed. Attempts were made to bring about a local or general infection with pneumococci by chilling the animals before, during and after the experiment; also inhalation of ether, finely divided quartz sand or talc did not make the animals any more susceptible than before.

T. A. PEPPARD.

THE VESSELS CONCERNED IN CLINICAL "CAPILLARY PULSATION": J. J. Sumbal (Vol. 10, July, 1923). The author describes his method of observing the movements in and of the capillaries. He is enabled to obviate the difficulties of other workers who have been confused by movements of the nail bed as a whole. He concludes that clinical capillary pulsation of the lip as this is seen in cases of free aortic regurgitation is a phenomenon of the capillaries themselves.

T. A. PEPPARD.

THE DIFFERENTIAL DIAGNOSIS OF DIABETES: Henry J. John (Amer. Jour. Med. Sc., Aug., 1923). The author calls attention to the ambiguous position in which the clinician is often placed when a patient presents himself with no subjective complaints but is referred by the family doctor or the examiner of a life insurance company because sugar has been found in the urine either once or repeatedly. The physical examination is entirely negative, an examination of the urine frequently discloses no sugar, and an examination of the fasting blood sugar shows a normal content.

The writer warns against too definite advice without more careful observation, either in condemning the patient as a diabetic or allowing him to disregard the finding altogether.

The presence of sugar in the urine tells only that the kidney is permeable to sugar, but by itself doesn't disclose at what blood sugar concentration the overflow takes place, and since the permeability of the kidneys to glucose varies with the individual, he suggests reliance on the glucose tolerance test as of distinct confirmatory value in the early diagnosis.

He reports three instances in which the glucose tolerance test was of distinct value in the establishment of the presence of diabetes or not, and warns clinicians not to base the diagnosis on urinary examinations alone, on account of the danger to the patient if diabetes is present, and on account of the disadvantage of a deficient diet if the patient is not diabetic.

F. J. HIRSCHBOECK.

SURGERY

SUPERVISORS:

E. MENDELSSOHN JONES,
LOWRY BLDG., ST. PAUL
VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

SURGERY OF THE THYROID AND ITS MORTALITY: Charles H. Mayo and John deJ. Pemberton (Ann. of Surgery, Vol. 78, No. 2, August, 1923). Accurate classification of thyroid conditions is necessary in computing the mortality of thyroid operations. The presence or absence of hyperthyroidism and the nature of the hyperthyroidism are very important.

Operative and postoperative accidents are the only dangers involved in operations on simple goiters, which include adenomatous goiters, malignant goiters, thyroiditis, pulmonary infections, obstructive dyspnea, tetany, and intercurrent diseases. In 16 months 819 thyroidectomies were performed on 819 patients with simple goiter with three deaths, making a mortality of 0.36 per cent.

Exophthalmic goiter and adenomatous goiter are considered separately because of the difference in efficiency of preoperative preparation and other features. Patients with exophthalmic goiter are coming for surgery earlier than previously and this fact has improved the operative mortality and end results. Another very important factor in reduction of postoperative reaction of hyperthyroidism is medi-

cal and surgical preparation. The medical measures consist of rest, adequate food and fluid intake, digitalis as indicated, and the one administration of Lugol's solution under the control of basal metabolic estimations. Injections of hot water or a ligation is done in doubtful cases as a surgical tolerance test. Thirty per cent of the patients need no special preparation and 20 per cent are so bad that they are sent home for a period of three months to rest after two ligations. This régime has lowered the mortality to 1.5 per cent by case and to 0.92 per cent by operation. Primary thyroidectomy has increased 18 per cent and the necessity for two or more ligations has decreased 12 per cent under the combined medical and surgical management.

The dangers of surgery in adenomatous goiter with hyperthyroidism are mostly the dangers of the results of visceral degenerative changes and not the dangers of acute hyperthyroidism as in exophthalmic goiter. The intensity of hyperthyroidism is usually slight acting over a long period of time, so that the course of this disease is insidious. In bad cases preparatory measures are not effectual so that the operative risk is relatively light. The operative mortality is 3.24 per cent in this type of case and dependent upon the number of bad risks accepted.

"Because of the facts that the successful removal of adenomatous tissue is followed in from ten to fourteen days by a complete subsidence of hyperthyroidism, and that the improvement is immediate in many of the otherwise hopeless cases, extension of the limits of operability to include nearly all patients is justified."

A table of operative mortality of exophthalmic goiter operations from January 1, 1922, to May 1, 1923, closes the paper.

V. C. HUNT.

THE OPERATION OF CHOICE IN SURGERY OF THE KIDNEY: William E. Lower (Ann. of Surg., August, 1923). In contemplating surgical operations upon the kidneys, the following must be considered:

1. Presence or absence of a second kidney.
2. The function of both kidneys.
3. Which kidney should be operated on first, where both are in need of surgery.

Tumors of the kidney are practically always malignant and should be treated by nephrectomy, with removal of as much fatty capsule as possible, followed by deep x-ray therapy.

Stone in the pelvis of the kidney should be removed surgically by opening through the pelvis. Many stones in the substance of the kidney near the pelvis are best removed through a pelvic incision or an incision in the pelvis extending up through part of the kidney substance. Bisection of the kidney is never indicated. One can be certain that all the stones are out by fluoroscopy or by taking a plate. When stones are present in both kidneys the location of the stones may be the determining factor as to which should be operated on first. A stone which is blocking the urine is more destructive to function than one elsewhere. Cases of bilateral stones should practically always be operated on because they will eventually destroy life.

Tuberculosis on one side with definite abscesses calls for

nephrectomy. However, in cases where there are only subcapsular tubercles, it is better to leave the kidney alone, as nephrectomy often lights up a general miliary dissemination. The problem in these cases is diagnosis. In cases of bilateral tuberculosis, symptoms may be alleviated by removing the more extensively involved kidney.

When there is a well defined local abscess in cases of kidney infection other than tuberculosis, a nephrectomy should be done. Cases with multiple septic infarcts involving the kidneys should not be operated upon early, as many of them in which both kidneys are involved will recover.

Hydronephrosis (especially infected hydronephrosis) is best treated by nephrectomy. "No inclusive statement can be made regarding the operative management of any type of kidney lesion. All factors in the individual case must be considered in making a decision as to the proper operative procedure. If the proper preoperative precautions are taken and a careful choice of operation is made, the mortality rate of operation on the kidney will not be high. In my own series the mortality rate has been 1.7 per cent."

W. P. HEREST.

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

THE TREATMENT OF VASCULAR NEVI WITH RADIUM: R. H. Rulison and Stafford McLean (Am. Jour. of Dis. of Child., May, 1923). The type of lesion treated by radium in this study may be classed as raised capillary hemangiomas. A fairly uniform experience warrants the generalization that, other things being equal, the younger the patient, the better and more rapid are the results under radium therapy. Angiomas are much more refractory in adults than in children. In the former, they are really organized tumors. The presence of ulceration and hemorrhage is not a contraindication to the use of radium. In the therapy of vascular nevi, a fairly wide range of selection is open to the physician: surgery, the electrolytic needle, electrocoagulation, carbon dioxid snow, caustics, ultraviolet light, roentgen rays and radium. These have all been used with varying degrees of success, depending on the location, type and size of the nevus and upon the skill of the operator. The electrolytic needle is the method of choice in the treatment of the spider nevi and telangiectasia in general. When used on the larger growths, much depends on the skill of the operator. There is usually some scarring. Electrocoagulation is one of the newer methods of treatment and has much to commend it. Few men have had enough experience with it to use it successfully. In any case it involves the ability to determine in advance the limits of the growth, and this in certain cases offers a difficult problem. If it were possible to locate the main vessels supplying the nevus and obliterate them by this meth-

od, it is conceivable that a perfect result might be obtained. For the cavernous types of angioma of moderate size with a hard background, such as the bones of the skull or any other bony background or even firm muscle that exerts counter pressure, carbon dioxid snow is probably the method of choice. The use of carbon dioxid snow presupposes the necessity of destroying the covering of the blood vessels and replacing it with scar tissue. The use of caustics, either acid or alkaline, is becoming less common. The method has no advantages over other forms of therapy, and sometimes unsightly scars result. Treatment of port wine marks by the use of the Kromayer lamp has given good results in the hands of a few, expert in its use; most patients become discouraged because of the large number of exposures required and the slow improvement observed. The treatment of vascular nevi by means of the roentgen ray is no longer in vogue, for their response to radium is much more prompt and complete. The advantages of radium treatment are the freedom from pain, the very gradual changes in the lesion which can be watched from treatment to treatment and the probability of causing the lesion to disappear without appreciable damage to the overlying skin. The scar following the skillful use of carbon dioxid snow is often insignificant. Telangiectasia, classed as nevi, is better treated by electrolysis. Surgery often gives brilliant and rapid results. In certain selected, raised vascular nevi of the face, radium therapy yields results which probably cannot be achieved by other methods, especially if the treatment is commenced in early infancy.

R. N. ANDREWS.

ULCERATIVE STOMATITIS AND ITS TREATMENT BY THE INTRAVENOUS INJECTION OF ARSENIC:

Edward A. Morgan (*Amer. Jour. of Dis. of Child.*, May, 1923). The terms Vincent's angina, trench mouth and suppurative gingivitis refer to an acute infection of the gums by spirilla and fusiform bacilli, producing certain local signs, such as spongy, bleeding gums, necrotic areas in the immediate vicinity of the teeth and general symptoms, as malaise, pyrexia and anorexia. The predisposing causes of suppurative gingivitis are lowered vitality and oral uncleanliness. The exciting cause is an infection of the gums by Vincent's organisms. Smears from the buccal mucous membrane of fifty normal mouths gave only one positive result for Vincent's organisms. Smears from the teeth of twenty-five normal persons gave four positive results, whereas smears from diseased teeth of a large number of persons gave 90 per cent positive results. Although the infection is, in many cases, autogenic, it is very readily transmitted from one person to another. The two principal modes of transmission are kissing and the use of food utensils which have been carelessly washed. The onset of the condition is usually sudden. Anorexia is an early and constant symptom, the child refusing all solid food; even liquids are taken sparingly. The breath is very offensive, the odor being identical with that given off from any putrefactive process. The gums are deep red or purplish and heaped up around the teeth; they bleed very readily at the slightest touch, and, if the disease has been of four or five days' standing, there are often areas of necrosis along the gum margin. The employment of some form of arsenic in solution has

been advocated, the most popular formula being known as Bowman's solution, which consists of a solution of potassium arsenite, 12 c.c.; wine of ipecac, 12 c.c., and glycerin, 8 c.c. This was painted on the inflamed gums several times daily, but although the relief was immediate it was not always permanent. It seemed reasonable to assume that arsenic administered intravenously would be more apt to reach these deep foci and thus effect a more lasting cure. There were no instances of the disease occurring in children before the eruption of teeth.

R. N. ANDREWS.

GYNECOLOGY AND OBSTETRICS

SUPERVISORS:

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ALBERT G. SCHULZE,

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ISOAGGLUTINATION IN NEW-BORN INFANTS AND THEIR MOTHERS. A Possible Relationship Between Interagglutination and the Toxemias of Pregnancy: Irvine McQuarrie (*Johns Hopkins Hospital Bulletin*, Vol. 34, 384). The paper deals with isoagglutination in new-born infants and their mothers with special references to the etiology of eclampsia and pre-eclamptic toxemia. Observations of Flexner showed that the hyaline thrombi found in areas of necrosis in the livers of women dying of eclampsia were composed of agglutinated red blood cells. One explanation of the presence of agglutinated red-blood cells in the maternal circulation is the possibility of isoagglutination between maternal and fetal blood, provided: (1) that the fetal blood shows the phenomena of agglutination; (2) that the blood grouping of the fetus differs from that of the mother, and (3) that the placental barrier between the two circulations is broken down, allowing fetal blood to reach the maternal circulation. Concerning the clinical features of blood transfusion reactions: recognized that severe toxic reactions occur in man when unsuitable blood or hemagglutinative and hemolytic serum is transfused from one individual to another. These reactions frequently suggest the symptoms and signs observed in certain toxemias of pregnancy, namely: rigors, fever, vomiting, embolic and thrombotic phenomena, jaundice, hemoglobinuria, albuminuria, oliguria, edema, urticaria, pruritis, headache, dizziness, blurring of vision, epigastric pain, constriction, increase in blood-pressure, convulsions, anaphylactic shock, coma and death. There is some evidence that the proteins of one human blood group when introduced parenterally into individuals of another group act precisely as foreign proteins and give a reaction similar to serum sickness. Studies of the thrombotic and embolic phenomena of transfusion reactions, though fragmentary, demonstrate that agglutinated red-blood cells from various sources may form hyaline thrombi in the capillaries of the liver, kidney and other organs, leading to focal necrosis. Pearce showed hemagglutinative serum, given intravenously, causes such

changes within 24 to 48 hours. Such lesions resemble those originally described by Flexner in eclampsia.

The present research involved the matching of the blood of a series of 180 new-born babies with that of their mothers, to determine the presence of agglutinins and grouping. Both normal and toxemic cases were included. The clinical observations were made by other members of the staff and later the findings were compared. In the 180 cases, 84 showed no evidence of isoagglutination, 53 showed a partially established blood-grouping the same as that of the mother, 44 had a grouping established different from that of the mother. Receptors are present at birth more frequently than are agglutinins, since in but five instances did the child's serum agglutinate the mother's corpuscles, while the child's red-blood cells were agglutinated by the mother's serum in 42 cases. This shows that agglutinins are not easily transmitted through the placenta.

The distribution of the cases of mild and outspoken toxemia is shown graphically in two charts. Interagglutination of maternal and fetal blood occurred in 44 cases or 24 per cent of the total. Of these 16 were normal, 18 mildly toxic and 10 definitely so. In 124 cases or 75.6 per cent of the total there was isoagglutination between the fetal and maternal blood and there were but six cases of mild toxemia and six of outspoken toxemia in this group. In other words 70 per cent of the toxemias occurred in the 44 cases of isoagglutination or 24.4 per cent of the entire series.

In 44 cases the maternal and fetal blood was found to be incompatible, which group included 18 instances of mild toxemia and 10 of outspoken toxemia, while among 52 cases where the bloods were not incompatible there occurred but one definite toxemia and one mild form. Ninety-three per cent of the toxemias occurred among the group with incompatibility of the maternal and fetal blood as compared with 6.3 per cent in the cases where no such incompatibility existed. According to the limited data presented toxemia would be 16.5 times more likely to occur when the maternal and fetal bloods are incompatible than when they are in the same group. When the clinical features of blood transfusion reactions are compared with those of obstetrical toxemias, a certain similarity must be admitted. Before considering such a casual relationship, the following requirements must be fulfilled: (1) the isoagglutination characteristics must be developed when the toxemia appears; (2) that the fetal blood grouping differ from the maternal; (3) that a sufficient fetal blood enter the maternal circulation to give rise to the pathological changes observed. The author develops sufficient evidence from the literature and his own experience to suggest that the requirements may be fulfilled.

His conclusions are: (1) the isoagglutination blood group is completely established at the time of birth in a small per cent of cases and partly established in a relatively large number; (2) the intact placenta is impermeable to isoagglutinins and the blood group of the infant may differ from that of its mother; (3) before the mother's blood or that of any other individual is employed for transfusion of an infant, it should in every case be matched with that of the infant; (4) although the data submitted do not permit final conclusions, they suggest a relationship between the

incompatibility of maternal and fetal blood on the one hand and the development of eclampsia or pre-eclamptic toxemia; (5) such a theory is merely tentative and cannot be accepted till a satisfactory mechanism has been demonstrated by which the fetal blood can gain access to the maternal circulation.

ARCHIBALD L. McDONALD.

THE OLSHAUSEN OPERATION FOR SUSPENSION OF THE UTERUS: William P. Graves (Amer. Jour. Ob. and Gyn., Vol. 6, No. 2). The author discusses briefly the cardinal symptoms of the condition. He places special emphasis on the descensus of the uterus at the pivotal point of the internal os, and in his operation aims primarily to restore this to its normal level. He discusses critically the various types of operation in common use. In Graves' clinic the Olshausen operation has come to be used as the method of choice. They follow a simple technique similar to that commonly described. The round ligaments are clamped firmly one-half inch from the uterus, which is then drawn up to the abdominal wall. Braided silk is used and is passed through the peritoneum, muscle and fascia close to the midline, and is tied within the peritoneum.

In some of the most marked cases hysterectomy is done, the round ligaments sutured in the stump and the entire mass supported by fastening the ligaments to the anterior wall as above described. They have had no cases of intestinal obstruction. In instances of marked relaxation of the abdominal wall it may be necessary to repair the diastasis of the recti muscles. The author's experience with this operation includes 1,370 cases, of which 746 were available for follow-up study. In six cases the artificial ligament failed to hold. In 15 of the 1,370 cases the silk stitch became infected and in six required removal. There were no known cases of intestinal obstruction or of dystocia. Graves regards the operation as the simplest and most easily performed, and as the equal to any and superior to many of those in common use. It is simple and avoids extensive dissection. In cases of prolapse it permanently reduces the descensus and relieves symptoms. It is the chief factor in the cure of cystocele. Its one serious drawback is the silk ligature, which, however, is essential.

ARCHIBALD L. McDONALD.

ROENTGENOLOGY

SUPERVISORS:

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A NEW METHOD FOR THE ROENTGEN EXAMINATION OF THE COLON: A COMBINATION OF THE CONTRAST ENEMA AND AIR INFLATION: A. W. Fischer (Klinische Wochenschrift, August 20, 1923). At present the contrast meal, the contrast enema, and air inflation are the approved methods in the roentgen examination of the colon. The first is objectionable because of failure to fill out the bowel; the second, because of the

superimposition of loops of colon in the region of the sigmoid and the frequent failure to properly visualize the cecum and ascending colon; the third because of haziness of contour and irregular filling.

The author combines the contrast enema and air inflation by using a double stop-cock, first injecting a barium mixture until it reaches the cecum, and then inflating with air. The latter is done with the patient in the erect or the prone lateral position, under the guidance of the fluoroscope.

The advantages of this method are due to the greater separation of the walls of the bowel, the floating up of the colon, and the clearer definition which is the result of the contrast between the air and the barium. As a result of the inflation a thin layer of the mixture clings to the wall of the bowel while ulcerations cause small collections of the mixture in one area. Tumors appear very sharply and adhesions can easily be recognized. The spleen, liver, and often the gall-bladder are clearly visualized, and adhesions to the liver are shown. In two hundred cases already done by this method no harmful results whatever have been noted. Six case reports are presented with plates to illustrate the application of the method. These include a wide variety of pathological conditions and serve to indicate the advantages of the method; by means of it mistakes in diagnosis which were the result of the use of the contrast enema were corrected. The author feels that a marked improvement will take place in the examination of the colon if this method is used, especially in the diagnosis of early carcinoma.

LEO G. RIGLER.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

THE NOTE BOOK OF AN ELECTRO-THERAPIST. Mel. R. Wagoner, M.D. 173 pages. 25 illustrations. Chicago: McIntosh Electrical Corporation, 1923. Cloth, \$5.00.

RUBBER AND GUTTA PERCHA INJECTIONS. Charles Conrad Miller, M.D. 99 pages. Illustrated. Chicago: Oak Printing and Publishing Company, 1923. Cloth, \$1.75.

IMPOTENCY, STERILITY AND ARTIFICIAL IMPREGNATION. Frank P. Davis, M.D. C. V. Mosby Co.

This book may have been written for the entertainment and enlightenment of the layman rather than for information for the student of medicine.

The author devotes a chapter to each of the senses of smell, hearing and sight in their relation to the sexual desire but not a paragraph is devoted to the rôle that might be played by members of the endocrine family in the rather baffling question of sterility.

The new procedure of tube inflation is not mentioned, nor does the author quote statistics.

Two chapters are devoted to therapeutics in which are mentioned Gold, Wintergreen, Quinine, Witch Hazel, Strychnine, Bromides, Sulphur, Phosphorus and Zinc, etc., etc., even Chinese incense.

A. G. SCHULZE, M.D.

CLINICAL LABORATORY METHODS. R. L. Haden, M.D. Pp. 294. St. Louis, C. V. Mosby Co., 1923.

This is a very much condensed work and should be an excellent reference book for all laboratory workers. It cannot be too highly recommended for use in Hospital Laboratories where technicians are being trained. It covers practically the whole field of Clinical Pathology. This is done by giving just one reliable and accepted test for each routine laboratory procedure. As a whole these tests are well selected. But in this connection must be mentioned the unfortunate absence of any consideration of such an important test as that of Basal Metabolism.

In such a condensed work it would be impossible to give interpretations of results and this has not been attempted. However, in many cases, normal findings have been given for quantitative tests. In this connection, a goodly number of well devised charts are given.

The chapters on blood are especially good, containing, as they do, the results of the author's recent original work on Volume Index and Hemoglobin Saturation Index.

A. C. POTTER, M.D.

FOR SALE—South Central Minnesota—\$10,000 to \$15,000 unopposed medical and surgical practice. 100 miles from Minneapolis. Town of 600. Prosperous farming country. Fully equipped hospital. Good churches, high school. Modern office, equipped for eye, ear, nose and throat work as well as general work and x-ray. Collections 98 per cent. Nearest competition 15-18-25-30 miles. Scandinavian community. Open to single or married man. Thorough introduction. Complete details on request. Am moving to city. Address B70, care MINNESOTA MEDICINE.

RECENT MINNESOTA graduate with two years' experience in country practice wishes location in a city with hospital convenience. Prefers partnership with an older physician. Can speak Scandinavian fluently. Address B72, care MINNESOTA MEDICINE.

TRAINED NURSE desires position in doctor's office or general daytime duty in hospital. Particulars given. Lillian E. Morris, Glen Lake, Minn.

WANTED—Minnesota location for eye, ear, nose and throat man with individual, group, or will buy outright. Had one year's training. Have done refraction for years, also extensive general practice. Middle aged. Mason. Address B69, care MINNESOTA MEDICINE.

PHYSICIAN and surgeon wanted. Good town, large territory. Right man can make from six to ten thousand per year. For full particulars, write E. V. Peterson, Gary, S. D. Box 176.

WANTED—Position as laboratory technician. Eight months' hospital training with additional practical experience. Good references. Address B71, care MINNESOTA MEDICINE.

MINNESOTA MEDICINE

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Northern Minnesota Medical Association and Minneapolis Surgical Society*

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ORIGINAL ARTICLES

THE DIAGNOSIS OF CHRONIC CHOLECYSTITIS*

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University of Minnesota

Minneapolis

Since to the surgeon disease of the biliary tract and gallbladder represents the most frequent chronic intra-abdominal infection with which he has to deal and by the internist and gastro-enterologist is recognized as the second great cause of chronic indigestion, it would appear fitting and profitable to discuss jointly the problem of differential diagnosis. For while the classical gallbladder, as seen by the surgeon in the patient who has been urged by his family physician, after years of observation, to be operated for gallstones, is scarcely to be regarded as a problem in diagnosis, we are just beginning to appreciate the necessity for earlier intervention and hence must be prepared to differentiate these cases at least a decade earlier than we are doing. Besides there are atypical types, so-called "silent cases" and complicated situations—all too many—met in the medical division, of which the surgeon sees or hears little and therefore, only too frequently, unaided, fails to unravel.

To appreciate the problem, it is necessary at the onset to be reminded of the fact that the gallbladder is only a unit in a definite digestive complex, embracing the liver, gallbladder, pancreas and stomach, and any disease affecting one unit is bound to be reflected in the whole system. While mere contiguity of these organs is of importance, a working knowledge of the circulation and nerve supply of these parts is of vital importance in differential diagnostic study and particularly would I draw your attention to the knowledge gained by the

work of Westphal¹ on the vegetative nervous system in relation to the biliary apparatus and the need of a full appreciation of its bearing on the problem under discussion.

The territory drained by the portal vein extends from the stomach to upper rectum. This is probably the most common route of infection via the liver, through the final lymphatics to the biliary tract and gallbladder. The lymph vessels of the gallbladder pass in a main downward in the gastro-hepatic omentum in close relation to the common duct behind the first part of the duodenum, to be embedded in the posterior surface of the head of the pancreas, here inosculating freely with lymph vessels of the duodenum and pancreas. Inflammatory occlusion leads to duodenal and pancreatic retrograde-transport infection. In conditions of bacteremia, the infectious agent, frequently a streptococcus or pneumococcus, is conveyed to the liver by the hepatic artery and thence via the lymphatics to the biliary tract and gallbladder.

The nerve supply is derived from both vagi and from the fifth to tenth thoracic nerves via the splanchnics. That part derived from the ninth right intercostal segment is the sensory nerve to the gallbladder, distributed to the cystic duct area (an attack of acute cholecystitis has been recorded as immediately preceding herpes zoster, affecting the skin area supplied by this nerve).

With this all too brief background, it is best now to go back and reconstruct the life history of chronic gallbladder disease and this is most profitably done by decades.

During the first and second decades, the development of cholecystitis is not infrequently noted in carefully taken case histories. Frequently, a severe angina, typhoid fever, pneumonia or acute appendicitis has preceded the onset by a few weeks or months. Then there develop:

1. *Toxic Symptoms*.—Periodic headaches, attended or not by nausea and followed by several days of food repugnance—often very migraine-like.

*Presented in symposium on Diseases of the Gallbladder before annual meeting of Minnesota State Medical Association, St. Paul, October, 1923.

2. *Reflex Digestive Symptoms*.—Fullness, belching, sour eructations, foul taste, qualitative dyspepsia. There is rarely vomiting and the dyspepsia varies from week to week with short exacerbations, but at this stage rarely causing the patient to seek a physician and yet at no time having a long period of entire freedom such as the duodenal ulcer patient has. So-called intestinal indigestion with flatulence is often a prominent part of the picture in this stage. A reflex asthma has been seen by myself at this stage.

The important fact to bear in mind is that at this time in the cycle of development there are no localizing signs and yet the gallbladder and its lymphatic structure, so important in its function of absorption, is being seriously compromised.

During the third and fourth decades and approximately seven times as frequently in the multiparous female, the evolution will gather force until—

1. Indigestion leads to vomiting without definite relief and belching for relief becomes more pronounced and continuous—the early hyperchlorhydria is now going over into a hypochlorhydria. At this stage hot water is often resorted to by the patient with a good deal of relief—not soda.

2. Biliary ache. The patient now complains of a dull aching sensation in the right hypochondrium radiating posteriorly in the path of the ninth right intercostal.

3. This ache mounts until a gradual attack of pain develops under the right rib region, attended by chilliness and mild or moderate fever, distention but little if any vomiting, lasting from one-half to two or three days—at no time requiring a hypodermic for relief. Since this is an acute lymphangitis of the gallbladder and proximal duct region, a leucocytosis is present. When the lymphatics of the pancreas and duodenum are implicated, the pain across the upper lumbar region is more pronounced and vomiting, with loose, fat-containing stools, frequently occurs.

4. The culminating phenomenon—a cholelithiasis attack—occurs when a pre-existing stone migrates, or attempts to do so, as a result of reflex or inflammatory hyperperistalsis. The immediate cause will be one or a combination of the following: (a) *Mechanical*—Jolting, particularly a rough automobile ride, walking down grade or down stairs and work involving stooping. (b) *Psychic*—A fit of anger. (c) *Menstrual*—And certain cycles

in the gravid state. (d) *Dietetic*—High fat diet, especially mayonnaise dressing.

This feature is of dramatic suddenness in onset, attended by reflex vomiting, usually repeated without relief from the pain, for which an opiate is required. While the pain is located at the ninth right costal margin, it is referred to the scapula or right shoulder or as high as the right suprascapular fossa. Often it is referred to the ensiform region and occasionally, when very much gastric distention is present, to the left scapula. Following the attack, which may cease very suddenly, there is a general abdominal soreness, but maximum at the ninth costal margin with a pronounced rigidity of the upper right rectus. Since jaundice is present in but 17 per cent of all cases seen in general practice, its absence following the colic attack is not, of course, of differential moment at this stage.

It is during the fourth to the eighth decade now that advancing local changes and complications can be expected. Time forbids more than an enumeration of these distinctly surgical calamities: (1) empyema of the gallbladder; (2) gangrene; (3) obstruction of the common duct; (4) pancreatitis; (5) rupture or perforation; (6) acute peritonitis; (7) intestinal stone obstruction; (8) malignant disease.

Having pictured the behavior of the more or less true-to-type gallbladder from its incipency to its advanced stage and having thereby become impressed with the fact that a proper appreciation of the time and sequence element is all-important, it is next in order to discuss the diseases and complexes which are most likely to be confused with cholecystitis and ways and means of differential diagnosis.

The most difficult everyday differentiation undoubtedly is furnished by diseases of the duodenum and appendix. In the former, we have contiguity, contact, associated nerve and lymph supply, as well as close physiologic relationship, together making differentiation at times a fine art and indeed there is all too frequently pathology in both organs.

A proper history relative to antecedent illnesses; a careful, indirectly arrived at story of the exact digestive symptoms (their relation to food, soda and exertion, their periodicity, etc.); the presence of colic (its radiation and its severity as measured by drugs required for relief) may frequently yield a presumptive diagnosis.

Physical examination—that part having directly to do with the localizing phenomena, is confined for all practical purposes to palpation, and there it has often been profitable to me to look for tender pressure points along the course of the ninth right intercostal nerve in the back and the phrenic reflex on the right side, for this tender point in the neck is present three times as often as a history of pain radiating to this area and hyperesthesia with tenderness on pressure not only is often a forerunner of a biliary colic attack, but lasts for many days after an attack. Murphy's sign is often entirely absent in the early gallbladder, which when present is of real value only in the slender individual with a duodenum not so intimately associated as these two organs generally are in the sthenic and hypersthenic type. When a definitely fixed pain point can be elicited at or near the umbilicus and the edge of the liver can be palpated during quiet respiration just under the costal margin, then it becomes possible to differentiate, with some confidence, between duodenal ulcer and the tenderness of an infected gallbladder. Rigidity is marked during an acute cholecystitis or cholelithiasis attack, but for differentiation, the most favorable time is during the defervescence of an attack. In the interim, there is in the majority of cases in the third, fourth and fifth decades, no hint of the well established pathology lying within.

Since the abdomen hides so well, it becomes necessary oft to turn to the laboratory for help in an obscure case. Secretory gastric studies yield little that is definite. Achlorhydria is present in from 40 to 50 per cent of chronic gallbladder cases, but is to be used with reservation as a differential point, for age and edentia are factors, and of course a lesser percentage of duodenal ulcers are accompanied by hypo- or achlorhydria. On the other hand, the roentgen contribution is indispensable, for, with good technique, in from 15 to 20 per cent of cases in which stones are found at operation, they can be directly demonstrated on the film. More important still, in 85 per cent indirect signs are found, which is a very respectable contribution to gallbladder diagnosis.

Based upon the erroneous assumption that the gallbladder is a storage organ and can be drained like the urinary bladder via duodenal siphonage, Lyon offered a solution of our differential difficulties in the so-called Lyon-Meltzer test. Ten years ago, when first occupied with bile drainage

studies, I convinced myself that the method had no future in the diagnosis of chronic cholecystitis. Fitz and Aldrich,³ within the year, working with a large material, have properly dismissed the procedure as of no differential value. Bernhard and Maue's¹ modification of Meulengracht's test for bile in the blood is of value for there is a wide margin between the normal bile values found in the blood and bile in the urine, for bile is a threshold substance.

In a suspected difficult case, in the absence of clinical jaundice and of bile in the urine, a restudy may be undertaken with profit when the blood bile values are higher than normal.

While the cholesterol problem has a bearing on the etiology of gallbladder disease quite apart from infection, as has been very well advanced lately by Boyd,² cholesterol determinations in the blood have yielded no practical help in diagnosis.

The roentgen ray helps materially in differentiating duodenal ulcer, by direct evidence, from gallbladder disease, but this is not true of the chronic, recurring type of appendicitis. Here a good history, the palpatory findings during or near a supposed attack, a leucocyte count and an absence of the proper etiological factors for gallbladder disease must be relied upon, not forgetting the frequent association, as well as the etioloigcal relationship between appendicitis and cholecystitis.

Perforation of a gastric or duodenal ulcer is attended by such violent symptoms of prostration and such marked and extensive reflex rigidity generally over the whole of the abdomen, that it needs to be considered only in differentiation from the complications of cholecystitis.

In renal colic, the reflex rigidity is in the lumbar muscles (although the abdomen may be very much distended) and the radiation of the pain is caudally. However, right hydronephrosis, large enough to present under the right liver edge, may be confused with gallbladder disease unless bimanual palpation is done routinely as it should be in every right hypochondriac region enlargement. Hernia of the epigastrium and umbilicus is always to be ruled out with care when lifting and reaching movements precipitate the colic attacks with regularity.

Gastric crises of tabes are readily confused with biliary colic, but with an adequate neurological study, there should be no difficulty. Occasionally,

stones producing no symptoms are present in a patient suffering with gastric crises of tabes, and operative interference is undertaken with no credit to all concerned, as I well remember in one personal case.

Not infrequently migraine, particularly when it takes on the gastric form, is difficult of differentiation from gallbladder disease. Here again a thorough familial history is of the greatest help; also the therapeutic test of luminal.

In women, usually of the fleshy type, in the fourth and fifth decades, there occurs what I have taken to be a spasm of the proximal colon ring where the physiologic cecum ends and the colon proper begins. These patients have a flatulent disturbance of the colon and will at intervals develop attacks of colic with vomiting spells and a temperature as high as 104, with a very marked tenderness and mild rigidity at the junction of the first with the middle third of the transverse colon. The attacks are followed by marked sallowness, and in the presence of a low-lying liver the problem is often one of observation and repeated roentgen ray studies. A number of these patients, in my period of observation of ten years, have not developed cholecystitis.

Diverticulitis of the colon is occasionally difficult to differentiate from gallbladder disease, but the localizing signs are far removed and the pain is referred caudally in the former.

In splachnoptosis with acquired membranes extending from the colon along the omentum to the under surface of the gallbladder and across the duodenum, we have frequently a syndrome simulating gallbladder disease. These are to be differentiated by: (1) the constant inconstancy of the pain—no free intervals like the gallbladder; (2) relief by lying down; (3) the presence of defective fixation of the cecum and ascending colon, as determined by palpation, particularly under the fluoroscope.

A calamity that can be avoided by a lively appreciation of relation of the colic to exertion is that of doing a cholecystectomy on an elderly patient affected with angina pectoris. This can readily happen when "silent stones" are found by roentgen ray and the agonial attacks radiate to the ensiform and not to the left shoulder and arm. There is probably more excuse for mistaking angina of the celiac vessels in an elderly patient for biliary colic, but here again the relation of pain to the

exertion and the influence of rest should be read aright.

While the foregoing discussion is aimed at differentiating the more or less classical gallbladder from lesions of other causation, it remains to merely mention that atypical forms exist, of which a few are the following:

1. *The Silent Gallbladder:* With no antecedent toxic or reflex digestive disturbance ushered in by a very agonizing colic attack following which dyspeptic conditions first develop.

2. *The Febrile Gallbladder:* No localizing signs or symptoms, no dyspeptic symptoms, but a daily temperature running a curve very much like a phthisical patient. I have seen one such in a young female patient who spent a half year in a sanitarium. The gallbladder in this case was very large, thin-walled and adherent for 10 cm. to the duodenum and its removal led to immediate restoration to health.

3. *The Neurological Gallbladder:* A type seen in middle-aged individuals with no complaint referred to the abdomen, but a multitude of so-called nervous symptoms, parasthesias and anxieties and often marked complaint with reference to head pain, in whom a routine gastro-intestinal study brings forth the surprising evidence of a rather advanced biliary disease and in whom surgery cures and relieves the neurologist of a vast burden.

4. *The Hypercholesteremic Gallbladder:* It is not infrequent (I have seen four such cases) that the surgeon will remove the gallbladder and the stones contained therein, in a patient ill with pernicious anemia, mistaking the icterus for obstructive jaundice, and then call in consultation because the patient does not proceed to convalesce as he is expected to. While in a certain percentage of hemolytic icterus cases the gallbladder develops from the hypercholesteremia and pleochromia a sufficient number of stones to cause intercurrent biliary colic attacks and operation is occasionally justified, in several experiences I have found the surgeon to be unaware of the underlying disease; whereas it is wise to hesitate always before attacking a gallbladder in the presence of an enlarged spleen.

In conclusion, then, I would plead for a comprehensive study of all chronically ill people by all the means at our disposal, with the hope of restoring a larger percentage of those who are sick in the right hypochondrium before irreparable

damage has been done to the liver, ducts, pancreas and duodenum.

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ROENTGENOLOGICAL DIAGNOSIS OF CHRONIC CHOLECYSTITIS*

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X-ray diagnosis is much more an art than a science—in other words it depends for its more accurate accomplishment largely upon the experience of the diagnostician. Especially is this true in the diagnosis of gallbladder disease since it is only through experience in this field that one gains the necessary confidence to rely upon the slight, often variable roentgenological signs of gallbladder disease.

Statistics.—It seems futile to speak of diagnostic results in this domain in terms of percentage, since most negative cases are not checked either by autopsy or operation, and it is therefore impossible to know how many cases of actual gallbladder disease are passed roentgenologically as negative. The writer prefers therefore to speak of his results in terms of impressions based upon case histories both before and after examination, as well as upon the results of operations performed either under a diagnosis of gallbladder disease, or for the relief of other symptoms.

The possibility of chronic cholecystitis requires consideration in practically every case referred to the roentgenologist for gastro-intestinal study. This is true because most cases so referred are atypical in their clinical manifestations. A critical review of the histories of our series of gallbladder cases would seem to indicate that the symptoms frequently suggest peptic ulcer but that they point

even more often and more strongly to some form of gastric neurosis. Many of these patients complain of epigastric distress or "gas pains," occurring with considerable regularity after the ingestion of food, and not infrequently relieved by food or alkaline medication. When, in such cases, the x-ray examination wholly fails to reveal any evidence of gastric or duodenal ulcer, the gallbladder comes under suspicion and every effort is made to elicit roentgenological signs, either direct or indirect, of chronic cholecystitis. If this effort is equally barren of results and the case is referred back to the clinician with a negative report, the chance of an organic lesion in the upper abdomen is reduced by a very large percentage.

Technic.—The technic of the gallbladder examination is simple but important. Success is in direct ratio to the thoroughness with which the x-ray examination is conducted, and co-operation on the part of both patient and referring physician is essential.

As a rule, no preparation except a twelve-hour starvation period is advisable, since experience seems to show that the employment of cathartics and enemas tend to increase the hazards of diagnosis. A series of roentgenograms of varying densities are made with rays of different degrees of penetration, and developed with special care to avoid over-development. The entire right half of the abdomen, from liver margin to pelvis is included in the *potential* gallbladder area. Best results are obtained without the moving Buckey grid, since it removes the gallbladder too far from the plate; but some of the series are made with the aid of this apparatus to add variety.

Following this series of roentgenograms, a routine gastric examination is made to (1) exclude ulcer or carcinoma, (2) seek indirect evidence of gallbladder involvement, (3) demonstrate any distortions of the cap due to gallbladder adhesions and to differentiate them if possible from ulcer deformities, (4) look for certain characteristic impressions of the pathological gallbladder upon the pars pylorica or cap and (5) to seek evidence for or against any abnormality in the ileo-cecal region which might explain the patient's symptoms.

The normal gallbladder.—The outline of the normal gallbladder is not seen roentgenographically because its density is approximately the same as that of the stomach and bowel walls with

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which it is in close proximity. There are probably exceptions to the rule that the normal gallbladder is not demonstrable, since rare instances of this kind have been reported. Thus, it is conceivable that a normal gallbladder temporarily distended with bile might offer the necessary contrast with duodenum and colon, especially if these chanced to contain quantities of gas.

The pathological gallbladder.—When the walls of the gallbladder become thickened by disease, or when it becomes filled with stones or exudate of a higher specific gravity than normal bile, there is offered the necessary conditions of contrast to surrounding tissues, to make its outline visible upon the roentgenogram. Rieder reports such a case, in which the chemical examination of the gallbladder contents gave the following result:

Water, 4 per cent; cholesterin, 80.9 per cent; bilirubin, .46 per cent; inorganic residue, of which a considerable part was calcium, 10.4 per cent.

Any gallbladder with pathological contents of this character should prove rather easy to differentiate. In the more acute cases, these inflammatory changes having not yet taken place, diagnosis upon any direct roentgenological evidence is impossible, but here the reflex disturbances in the function of stomach, duodenum and colon are most prone to occur and these serve to point the way to the correct diagnosis. That the chronically diseased gallbladder will escape roentgenographic detection in a certain unknown percentage of cases even with the most careful technic is probably true. But this percentage is becoming considerably smaller with improving technic and more intensive roentgenological study.

Stones.—The actual visualization of gallstones in the roentgenogram is, in the writer's experience, only infrequently accomplished. They escape detection either because their lime content is extremely small, or because the thickened gallbladder itself or its dense semi-liquid contents, does not offer the required contrast in density. The isolation of stone shadows, though satisfying and conclusive, is no longer the *sine qua non* of the roentgenological diagnosis, and the aim of the roentgenologist should be to so perfect his technique that he can demonstrate the more massive shadow of the gallbladder itself.

Artificial Aids.—Recent efforts to increase contrast by injecting air or CO₂ into the colon or duo-

denum have met with only indifferent success. The employment of artificial pneumoperitoneum doubtless brings many stones into relief which would otherwise escape detection, but the writer has always felt that the dangers of this procedure precluded its routine employment for diagnostic purposes.

Reflex Signs.—Certain rather characteristic disturbances in the normal peristalsis and motility of the stomach and duodenum occur in a large number of gallbladder cases. They may be enumerated as follows: (1) protracted emptying time, associated with gastric hypertonicity; (2) gastric spasticity, especially in the pyloric region; (3) pyloric insufficiency often associated with tonic contraction of the pyloric antrum.

Comment—Keller reports a case of circular spasm of the duodenum which yielded visibly under the anesthetic during operation for chronic cholecystitis. The delayed emptying time occasionally observed in gallbladder cases may be differentiated from that seen in obstructive duodenal ulcer by the absence of the characteristic hyper-peristalsis so common in the latter condition. The spastic contractions of the pars pylorica and duodenum are often associated with a marked spasticity of the colon which Mills considers a reflex reaction to the cholecystitis. Pyloric insufficiency manifests itself by a rapid passage of barium ingesta through the stomach and duodenum but this may be followed by pyloro-spasm so that the ultimate emptying time of the stomach is increased instead of shortened.

Lesser Signs.—Another sign which may have some diagnostic value is the dilated duodenum with or without stasis. The persistence of a barium residue in the duodenum after the stomach is empty, spoken of by some authors as the "persistent duodenal spot," is of undoubted value as an indication of gallbladder disease with adhesions about the duodenum. The demonstration of a dilated ampulla of Vater is also regarded as significant but in the writer's experience is very rarely observed.

Alterations in Position or Contour of the Pylorus or Duodenum occurring either as a result of pericholecystic adhesions or of encroachment upon the filled stomach or bowel by the enlarged and thickened gallbladder present a valuable group of roentgenological signs. The descending part of the

duodenum may be pulled upward and to the right so that it appears fixed under the liver. Adhesions may effect a pull upon the horizontal part so that the cap appears distorted. To differentiate this distortion from the deformities seen in ulcer it is necessary to examine the patient in various positions, and especially in the right lateral. The plate series may fail to show an entirely normal cap but the constant and unchanging deformity of ulcer is not present.

Pressure defects of the pylorus, cap or hepatic flexure are very characteristic. As a rule they do not even remotely resemble the filling defects of carcinoma but are very apparently due to pressure from some extrinsic mass. They sometimes appear only in the prone position but probably never occur as a result of pressure by a normal gallbladder. When these cup-like impressions are observed they are practically pathognomonic of a thickened or a distended gallbladder.

Ileocecal Region.—When only minor indications of cholecystitis are present these may be due to reflex reactions to some lesion in the ileocecal region. It therefore becomes necessary in such cases to carry the examination further and to attempt to demonstrate ileocecal or appendiceal stasis. If the examination of this region is also negative some weight is indirectly added to a gallbladder diagnosis.

Conclusions.—While roentgen signs alone are conclusive in many cases, there are others in which they are only contributory to the ultimate diagnosis. When they are inconclusive, the absence of other demonstrable lesions to account for symptoms has an important bearing. The clinician should not fall back upon the convenient but usually erroneous diagnosis of gastric neurosis, until every means available for the exclusion of an organic lesion has been thoroughly exhausted. Even then, such a diagnosis should be made subject to revision.

A gallbladder study should be included in all routine gastro-intestinal examinations.

The roentgenologist's report should be weighed by the character of the objective signs upon which he bases his opinion. When direct and typical, roentgenological signs are far more diagnostic than when they are indirect or reflex in character.

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THE SURGICAL DIAGNOSIS OF GALLBLADDER DISEASE*

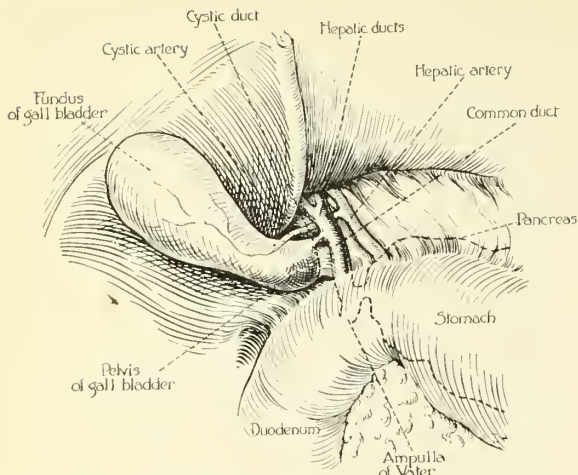
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I have interpreted the term surgical diagnosis to indicate that situation where the general examinations have led to an operation; the incision has been made, pathology in other organs has been proven or excluded, the biliary system has been exposed and the question arises as to the kind and degree of disease present.

This aspect of the subject requires the discussion of methods of examination and their interpretation in terms of surgical pathology. It is here that the man who has served his years of apprenticeship or who has developed his own cases and recorded them not only on paper but in his own mind and particularly he who has followed his cases to the laboratory, who is in a much better position to judge than the man who has been taught or has

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The field of surgical diagnosis is here illustrated. It is examined to determine (1) the kind and degree of disease, (2) the anomalies, (3) the position and disposition of the structures in reference to the feasibility and selection of operative steps.

come to view this whole subject as a debate of the relative merits of cholecystectomy and cholecystotomy.

A review of the methods of examination requires consideration of elementary facts and rules. The word rules is used advisedly because no standard routine methods can be acceptable to every operator; but it is a wise surgeon who develops his own sequence of steps. In many instances with special tables, rotation of the liver, disposition of the pads, posture and position, it is possible to visualize all parts not anatomically hidden; but not infrequently the important structures such as the common duct, the pancreas, and ampulla are most deeply seated. Exposure of the latter two requires operative steps not to be lightly undertaken, while routine opening of the common duct is in no wise indicated. In these structures pathology must be determined by palpation and successive cases should be examined in the same manner and systematically for the sake of comparison.

The parts to be examined are: (1) the gallbladder—fundus and pelvis; (2) the cystic duct; (3) the common duct; (4) the pancreas; (5) the duodenum at the site of the ampulla; (6) the hepatic ducts; (7) the lymph glands; (8) the liver.

These are to be noted: (1) the disease; (2) anatomical anomalies; (3) position and disposition of the structures with reference to the feasibility and selection of operative steps.

The fundus of the gallbladder is the most frequent site of macroscopic disease, the most evident

and accessible organ, and the first examined. Normally flaccid and compressible, it may assume most extraordinary changes.

Non-compressibility indicates obstruction to the cystic duct, impaction of the gallbladder lumen by stones or new growth or inflammatory production in its walls. Interference with its ready collapsibility is a most evident sign of disease.

Color in the reds is a positive sign of inflammation but the importance of this observation lies in our ability to determine the degree as to whether there is present an acute, a sub-acute or a chronic process.

In the greens there is a chance of confusion between bile stain and gangrene but the latter is associated with a feel of flaccidity or loss of resistance that can hardly be mistaken.

The white areas vary so greatly in extent and degree that they are the most difficult to interpret. It is probably most reasonable to consider them as indications of past inflammatory processes, which have resolved and are of no moment unless associated with other findings.

The size may vary from the small contracted obliterated gallbladder to enormous dimensions so large as to be confused with tumors in other organs. Any great variation in size must be due to mechanical cause or disease usually associated.

The fundus should also be examined as to its attachment to the liver with particular reference to the possibility of protecting denuded liver surface, should removal of the gallbladder be performed.

I am well acquainted with the recent literature upon the subject of drainage and toilet, but I firmly believe that in the inflammations failure to successfully cover this area is an explanation, if not of catastrophe, at least of stormy convalescence. I also believe that the demonstration of close attachment may possibly be a deciding factor in our course of treatment.

The gallbladder can be successfully palpated for foreign bodies only in state of complete collapse; while gross stones are readily felt it is seldom they can be counted, and bird seed stones are most elusive. This palpation should be most carefully and gently done, particularly in the normal borderline cases, as rough handling or grasping with forceps may cause mucous membrane traumatism and thus produce a situation where pathology may be created instead of relieved.

The pelvis of the gallbladder is most important not so much from the pathologic as from the surgical standpoint. Its position and relation must be carefully studied as it is at this point that most of the operative mistakes are made. Curving quite frequently in the long axis of the common duct, quite constantly attached to it by tissue which probably constitutes congenital reflections, when inflammatory processes occur we may have a serious problem to decide between, pelvis and cystic on the one hand or pelvis and common duct on the other.

located by its relation to the artery and foramen of Winslow. The operator standing at the patient's right can cover this structure by using the right hand in extreme pronation or standing at the patient's left using the left hand in supination. Of course if the duct can be brought up, standing at the patient's right the left hand can be used in supination. The point is that the index finger in the foramen gives best control.

This maneuver also seems to prove or exclude changes in the pancreas and the lower part of the duct down to the duodenum.



Subacute cystic gallbladder recently successfully removed.

The cystic duct is usually hidden and can only be demonstrated by dissection. It varies in length, may be distorted or may be dilated by foreign bodies. When it is involved, one of the most difficult problems of technic in the surgery of this disease arises, requiring extreme care and ingenuity to properly read out the condition. Ordinarily the duct can be completely visualized by dissection and I believe that failure or inability to do so is the cause of many serious complications.

The common duct because of its position is most difficult to palpate when normal and it can only be

The pancreas can ordinarily be felt. There is a symmetrical feel in a normal organ. All parts of it seem alike; so any change in any area must be due to a disease and indicates further examination. There are several plans for its exposure involving great care and it is possible to injure essential structures. Their selection depends upon the position of the stomach and duodenum. The avenue carrying the least possible risk is through the gastro-hepatic omentum.

Fortunately pathology at the lower end of the common duct is not found so frequently as for-

merly when most of our cases presented long histories and only came to operation when imperative indications arose. With our improved methods of diagnosis and earlier operation, involvement here is less common. Often the case gives the story of chill and jaundice and is approached with a diagnosis of a common duct process only to find the cause at the pelvis of the gallbladder or in the cystic duct with impingement on the common duct. Any dilation of the common duct indicates that its lower terminal is to be exposed through its lumen. Trans-duodenal investigation of the ampulla is only justified by exceptional circumstances.

The upper end of the common duct is the usual site of an anomalous course of the hepatic duct. At the first operation it is seldom that this is demonstrated. Most of the literature in this connection consists of reports of cases shown at second operation in the effort to explain some complication.

The liver must receive more attention. The splendid studies of Graham and his associates upon the relation of the liver and gallbladder in inflammatory conditions opens up a field of observation hitherto neglected. They indicate that we must resurrect the term hepatitis. They show that changes in the right lobe of the liver may be gross enough to give us macroscopic evidence of possible disease in the gallbladder. They prove the close association of the liver and gallbladder through the lymphatics and that the process may be retroactive. We have long known the connection of the liver with vast areas any one of which may be a source of infection. The lymphatic connection completes a hemato-lymphatic route of infection and thus demands a careful study of the liver, because this organ is a most important link in the chain.

The question arises whether we should in every case section the liver. So far as I have seen no penalty is attached to removing a piece for this purpose. These studies lead often to macroscopic observation and thus furnish added positive evidence in our border line case. This is a more recent and important field in surgical diagnosis.

The whole tendency of our literature, whether from case history studies such as recently presented by Alvarez or from experimental, clinical and pathological reports just mentioned, is toward cholecystectomy. The evidence is so positive that it suggests the propriety and need of reviewing

these textbook points in surgical diagnosis; because if there is only one form of treatment why debate the problem at all?

But there are surgical conditions and technical difficulties, which if disregarded lead to a primary mortality which can be minimized by conservative surgery.

I may be wrong or at least put it too strongly in saying that the general attitude of the surgical profession is that it is a defeat to drain a gallbladder.

We may all agree that this procedure may be incomplete; but if in certain cases it is so considered, we may still frankly inform them thus preparing them for follow up treatment at a more favorable time. Secondary operations may be most difficult and at times extreme procedures for the surgeon to perform; but it is my experience that the patient withstands the many times severe manipulations without reaction. The explanation is that a peritoneal field once abused never again reacts to either traumatism or infection in the degree of the first invasion.

I have mentioned the red gallbladder and its interpretation as a positive indication of inflammation. I do not believe that any one with experience will fail to differentiate between red gallbladder from cystic and extra-cystic cause. With the former the importance lies in our ability to determine the degree; whether the process is acute, ascending in virulence or declining in activity or practically quiet; whether it has attacked a previously normal gallbladder, or is an exacerbation of a subacute or chronic process; whether it is due to an infectious process or simply a mechanical exhibition of obstruction or pressure.

There is a group of cases described under the term acute cholecystitis in which radical surgery at the first sitting should never be undertaken.

The difference of opinion on this score is due to an uncertainty of definition, fostered by our effort to indicate a clinical state by the use of a pathological term.

The local condition may be most evident pathologically but the surgical interpretation must include consideration, before operation, of the constitutional reaction, the possible effect upon an already sick patient from the superimposition of traumatism and the creation of new avenues of absorption, and also the possibilities of repair, pro-

tection and prevention. With development of technique, augmented experience, personal expertness not only operative but in choosing the time of surgical attack, this field may be ever narrowing. Clinical acute cholecystitis calls for acute surgical judgment.

The next field of importance is that of determining between malignancy, the perforative lesions and the small contracted gallbladder. When this question arises every effort and every risk should be taken to conclude a diagnosis.

There is no more dissatisfied feeling than to retire in uncertainty on this matter. Demonstration of malignancy is mostly of value in prognosis, thus preventing subsequent procedures unless for palliative measures.

In the perforative lesions, there is often present on palpation at operation the feeling that only a part of the gallbladder is involved and that at the questioned point it is adherent to something else—the duodenum or exceptionally the stomach—while perforation in the liver gives a feeling of fixation at a part of the gallbladder.

Malignancy has a tendency towards involving the whole—as though it was a dead contracted gallbladder. Often it is impossible to differentiate without microscopical studies. In the large gallbladder I have seen adeno-carcinoma involving all surfaces and even extending into the ducts.

Usually in the perforative lesion there is extracystic evidence of inflammation which should lead us correctly. In this field where often the inflammation is burnt out and even gross quantities of pus demonstrated, radical surgery is indicated as strongly as are conservative methods in the acute forms.

In the pancreas changes are most difficult to differentiate. It is not hard to determine that there is a change, but to definitely decide between malignancy and inflammation our conclusion is so often a hope that it is not the former. Recourse and help must come from a consideration of the history and duration of events, age of the patient and local findings in other organs.

The acute forms of pancreatitis may present some diagnostic findings. They are usually operated upon with a diagnosis of gallbladder disease, although in two more recent cases nothing more was possible than a diagnosis of an acute abdomen.

The presence of bloody ascites is quite a characteristic finding and may be in such quantity as to suggest ruptured ovarian cyst. In the last case of acute pancreatitis, closely watched over several months with recurrent attacks of cholelithiasis finally reaching imperative surgical state, the liver was startlingly pink. If this fluid is quite constant in the severe forms is it not possible to argue backwards and say that small amounts of fluid may be indications of the milder forms?

In gallbladders showing gross pathology (cystic, contracted, perforated, herniated, infiltrated), the function if not dead is at least impaired and the indications are positive. The question in an individual case is the feasibility of radical procedures. In the border line cases it is not possibility but the necessity that is the question. These cases embrace those with white spots of the fundus, with pericystic adhesions, the much discussed strawberry gallbladder, ones that are still compressible and retain, so far as possible to demonstrate, all functions. These offer the field for future study.

It is well for us to admit that we are criticizing each other for taking out this type of gallbladder or leaving in that gallbladder, that this man is too aggressive and that one is too conservative. Some explanation may be made by the fact that many of us spent our active years during the development of this whole subject, have clung to early experience with gross pathology, have a tendency to view new suggestions with suspicion, and are too placid in the acceptance of old teachings regarding the avenues of infection. Why study these things because it is not possible to demonstrate the source in each and every case?

The newer suggestions render it important that we clinically prove or disprove the hemato-lymphatic route because it emphasizes the liver. This is accessible and can be studied. Demonstration of changes in the liver will then indicate and justify the early removal of the gallbladder even in those cases apparently normal. My personal feeling is that I do not care to remove this group as a matter of form or routine or merely on the history, but must demonstrate the pathology either local or remote.

This group will be greatly increased if we are able by exact and careful study of the case to operate earlier. Thereby the field of surgical diagnosis will be greatly broadened.

SURGICAL TREATMENT OF DISEASES OF THE GALLBLADDER AND BILE CHANNELS*

ARNOLD SCHWYZER, M.D.

St. Paul

Since the first cholecystectomy forty-one years ago the surgical treatment of diseases of the biliary tract has been a subject of importance for the surgeon, until of late years it has commanded the most active attention. The surgical views and experiences as reported in the literature are not yet standardized, though the large experience of many surgeons and the enormous material of a few has brought most satisfactory light and results into this chapter of surgical achievement.

The time allotted is so short when compared with the large field to be discussed, that in order to get anywhere at all and to give this paper any *raison d'être*, we will simply touch upon a few points of interest.

Old age is no absolute contraindication to operation, if we are confronted with bile obstruction or pronounced misery. Such a patient may well be taken into the counsel, after putting the chances openly before him, and, if the conditions of heart and kidneys are not prohibitive, he may decide whether he wants to go on with his pain or take the chance of operative relief. A bad heart, if not too bad for any kind of major surgery, is not an absolute contraindication either. It may be greatly improved by a successful operation. Quite often the patients are abnormally fat. If the general status is satisfactory, the fat in itself is of course no reason for desisting from operating—the skin incision is simply made larger, while the fascia wound remains of ordinary size. Even ascites and biliary cirrhosis do not absolutely prohibit surgery; nor does diabetes. All three may be better after operative recovery.

The most important chapter, as it represents the greatest number of cases, is cholecystitis. The question whether drainage of the gallbladder or excision of this organ be preferable in inflammatory conditions has been decided by the great majority of surgeons for the great majority of cases in favor of cholecystectomy. Only now and then do I find a case of cholecystostomy in our records

of the later years. The cases with much history and little findings are dangerous ground for the surgeon. Many of these patients are of the neurotic type, and drainage for any length of time with its consequences is almost sure to bring these people back very soon with the same and more complaints. If, however, in such a case the gallbladder appears enough incriminated, a clean excision without abdominal drainage is the proper procedure. In gallbladder surgery as elsewhere the surgical relief runs about parallel with the amount of pathology found and relieved.

Under what conditions is cholecystostomy advisable? Take the acute phlegmonous and gangrenous forms of cholecystitis. For a good number of years we have practically always removed these gallbladders. Nevertheless the general condition of the patient may force us at times to leave it in and to simply drain it, in which case ample free drainage of the whole territory must be procured through the wound and often also through a lumbar opening. The field is anatomically better protected than the appendix, inasmuch as the small intestines are not in direct proximity. However, the respiratory excursions of the diaphragm hinder somewhat the desirable complete rest of the parts, and extension of the suppurative process downward along the outer side of the colon and upward into the subdiaphragmatic space is the principal danger. As to the occurrence of progressive peritonitis and generalized sepsis after operation the virulence of the preexisting infection of a given case and the handling and manner of operating is of more decisive importance than the choice between *ectomy* or simple draining. Good exposure, very gentle handling, thorough walling off and painstaking avoidance of soiling a larger area and sufficient drainage are of prime importance. It is hardly right to advise *ectomy*, however, in all these cases of severest inflammation, because extreme forms do occur where even a slightly longer operation and a small amount of harsher handling may be just too much.

Now and then in making a routine examination of the gallbladder during a pelvic operation we feel a large gallstone or two. You let an assistant re-read the whole history of the case. There is no definite indication that the stone made trouble. The gallbladder may be flabby, thin walled, not distended. Under such conditions we do not feel justified to add much operating and we have re-

*Presented in symposium on Diseases of the Gallbladder at Minnesota State Medical Association meeting, October, 1923.

peatedly simply made a small (perhaps 2 inch) incision upon our fingers inserted through the low abdominal incision, pushed the gallbladder into the wound, grasped it, removed the stones, sewed in a rubber tube with two or three inverting purse string sutures and dropped the gallbladder back without further drain or suture except one or two silk-worms for the abdominal wall. In such a simple case we have even—as an exception—closed up the gallbladder and abdominal walls without drainage, though this so-called “ideal cholecystotomy” is usually not so very ideal. Let us consider what local changes we create by drainage of the gallbladder. Take the case just mentioned, a rather normal looking gallbladder with one or two stones. You open it and cause some bleeding; you remove the stones and cause some abrasions; you sew in a rubber tube which has more or less sharp edges. A little blood remains in the gallbladder after you close up, or accumulates later. The pressure of the tube may cause a decubitus near its free edge, and a certain degree of contamination during the convalescence cannot be avoided. All this may invite stone formation especially in a gallbladder which had this tendency before. Like probably most surgeons, I have removed large stones six months after a cholecystostomy with an apparently clean removal of all the stones. Therefore, if cholecystostomy is to be performed, we have to treat the mucosa very gently; must guard against accumulation of blood; the rubber tube should not be too rigid, should not be inserted too deep and ought to be brought out of the abdomen in an easy course, more or less in the direction of the long axis of the gallbladder.

Again a simple drainage operation is preferable in a severe cholemia, particularly when we have to deal in an elderly patient with a dilapidated condition. The simplest possible operation to establish an outlet for the bile is here in order. A cholecystostomy under local anesthesia and without any fixation of the gallbladder to the abdominal wall is the best. Under local anesthesia? Not really local, but rather regional, by injecting the 0.5 or 0.25 per cent novocain solution somewhat away from the line of incision, with no adrenalin added. Thus a possibly fatal post-operative hemorrhage may be averted in these deeply jaundiced cases. The skin can even be simply infiltrated with normal saline solution.

In this connection I should mention the great

benefit derived from the administration of calcium salts. Last fall a severely jaundiced man of about forty-five years was brought into the hospital with a stone in the common duct. The coagulation of his blood was still incomplete at the end of thirty-five minutes, the longest we have ever observed including even hemophiliacs. With calcium administration intravenously and per os the coagulation time was reduced to eight minutes within four days. The stone was removed from the common duct, a cholecystectomy was added and the recovery was uneventful.

Is it better to preserve the gallbladder for drainage in cases of marked swelling of the pancreas? When in acute cholecystitis the pancreas is swollen and of the nodular or lumpy type, it can safely be taken as a comparatively less important concomitant swelling, secondary in importance and directly due to the infection of the gallbladder. It recedes after cholecystectomy, which is therefore the proper treatment for it. An instructive case might be mentioned for illustration. A lady of about thirty years was operated upon for gallstones with a moderate inflammatory icterus. The head of the pancreas was greatly swollen, forming a regular pyramid protruding forward about 6 centimeters. The gallbladder was emptied and drained. This was ten years ago. The patient was at first much improved; but after some months she did not feel as she should have felt, and two years after this operation we had to go in again. Again the pancreas was greatly swollen. This time we removed the gallbladder, had a much shorter convalescence and the patient remained cured.

Drainage of the field of operation. In cholecystostomy, unless the case is a very infectious one, there need be no drainage besides the tube in the gallbladder. In cholecystectomy, in case the field is soiled with acutely formed inflammatory material or especially if in addition troublesome oozing exists, it is safer to drain. The drains are preferably of soft collapsible rubber, if the infection does not appear too virulent. If free drainage is necessary, rubber tubes are safer. Gauze drainage we use only exceptionally under stress, and even then we try to protect the intestines and the abdominal walls as much as possible from its contact by soft rubber. The benefit of gauze lies in its firm agglutination to the wound, consequently in its hemostatic effect, and in its capillary suction. The latter becomes ineffective in a few hours,

as soon as the meshes are filled with thick material. The firm agglutination to the tissues creates a prompt and good walling off of the field, but the trouble starts often when we remove the gauze. A number of years ago I had to give a general anesthetic in such a case in order to remove the gauze drain, which we had tried to free for several days by twisting and pulling. A unique sad experience we had in another case, which may serve as a warning. It was in the days when gauze drainage was still commonly used. Six days after an absolutely uneventful cholecystectomy for stones we removed a thin long gauze drain. Some adhesions must have been torn by this somewhat too early removal and a fatal peritonitis followed. Since then we avoid gauze drainage almost entirely.

In the last two years most of our cholecystectomies were sewed up tight; but now and then it appears safer to insert a drain. It does not seem to be generally known that ten years ago some German surgeons advised tight closure without drain even after suture of the common duct. They were then fought vigorously by Kehr, and the innovation died away. If draining with a narrow strip of soft collapsible rubber does not cause severe adhesions, does really not lengthen the whole wound healing, and in fact, hardly drains sufficiently when free and ample drainage becomes necessary, why should it be an object of controversy, as long as it gives us in a doubtful case valuable information and additional safety? On the other hand it must be acknowledged that the keen surgeon who is able to operate on the common duct without drainage, has taught us some important things as to the capabilities of the peritoneum, observations very valuable for our work, though we may make only partial use of them. It is at least a comfort to us, even if we choose to tie ourselves to a rope when venturing over the glacier with its snow-hidden crevices, to know that somebody is walking free in front of us. Let us admit that barring accident he will get across before us and thus may avoid other dangers.

As to complete closure of the common duct without any drainage, the degree of post-operative swelling at the papilla through traumatism cannot be foretold. It seems therefore advisable after operation on the common duct not only to make sure of the permeability of the papilla but to dilate it gently to give free outlet for any possible chips or debris from stones. A very grave complication ought to be mentioned in this connection, one where

the most unhampered exit for the bile must be secured; this is in the cases of so-called white bile. All these cases are severely jaundiced, and anything must be done to facilitate the resumption of activity by the liver. We have had only three such experiences. In one, stones were found in the gallbladder, in the common and hepatic duct and far up the hepatic branches. Insertion of the scoop in any direction into the liver channels was answered by a gush of partly clear, partly whitish fluid. On the evening after the operation there was a little bile staining on the dressings and the case recovered. In the second case normal bile showed up after twenty-four hours, and that patient got well, too, while the third case died after five days without producing a drop of normal colored bile.

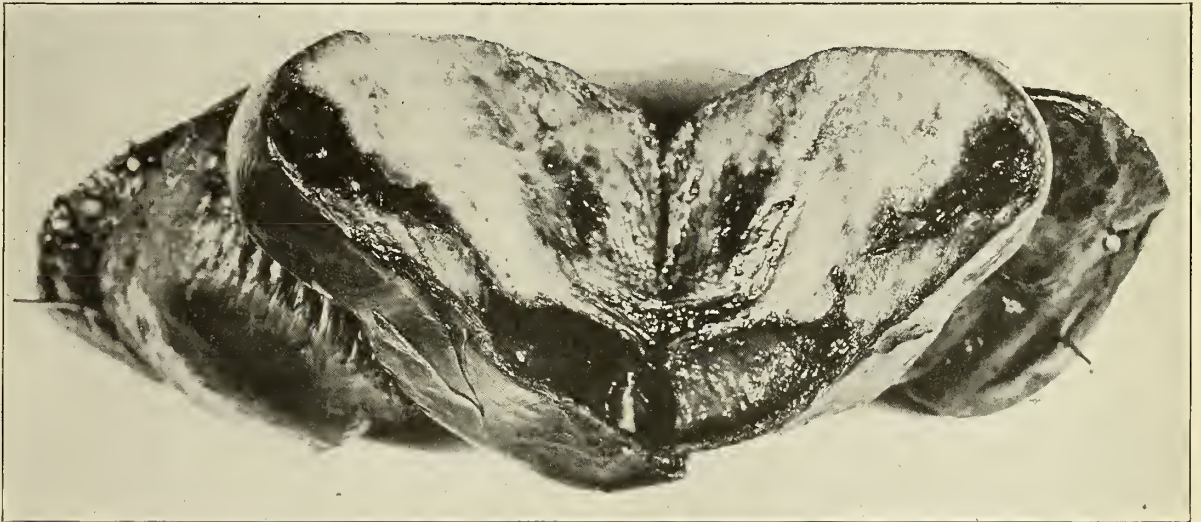
Among the complications encountered in gallstone surgery part are due to numerous anatomic anomalies of the deeper structures with which the surgeon must be familiar, part to perforative and neoplastic consequences of cholelithiasis. Biliary fistulae on the abdomen are mostly tortuous and often contain large stones. The tract must be excised and the gallbladder removed. Internal travelling of gallstones by slow perforation is again an important chapter. You might permit me to mention an occurrence which illustrates exceptionally well this wandering of a stone. This gallstone, of the size of a walnut, was found embedded in a fibrous mass underneath the gallbladder. After removing the stone, three perforative openings could be seen from the interior of its fibrous encapsulating shell, whose walls were about 1 cm. thick. One opening admitted the tip of the index finger and led into the gallbladder, another with a diameter of half a centimeter led into the duodenum, while a third one, a little larger, connected with the transverse colon. The stone was thus at the parting of the ways, one road leading through the duodenum probably to a gallstone ileus, the other through the direct route of the colon possibly to a self-cure.

One mishap which is rather frequently reported of late, is injury to the hepatic or common duct. Mostly a portion of it was removed with the cystic duct. This may occur in severely inflamed adherent and thickened gallbladders where the anatomic structures are not definitely recognizable. The hepatic duct is then much smaller than the cystic, and we have seen it embedded in the bulky wall of the cystic duct. In one such case we removed by

accident (incredible as it seems) the whole hepatic duct up to its bifurcation into the right and left hepatic branches. Fortunately the condition was recognized by a close examination of the specimen immediately after the operation. The patient, a woman of sixty-nine years, could not have stood more operating at that same session. Sufficient drainage had been provided for. Six days later a medium sized catheter was inserted into the left hepatic duct and the lower end through the remainder of the common duct into the duodenum. The catheter was attached to the stump of the cystic artery which happened to present itself as a fixed point. The common duct was easily brought up to the point of emergence of the catheter from the liver. The catheter is still in place after two years, and the patient is free from pain, jaundice or any complaint, and is very active for her seventy-one years.*

removed. It seems best not to use too much force, as fragments may remain behind, but rather to make the opening large enough for free peeling off of the wall from around the stone. The introduction of a gauze pad above the liver to render the parts more accessible, as advised by Mason, has helped us in some cases. Kocher's mobilization of the duodenum by a paraduodenal division of the peritoneum along the right border has helped us at times to get better access to the retro-duodenal part of the common duct, which here rather frequently runs not only through a groove but a complete channel of pancreatic tissue, which can safely be divided. When the stones are too far down for this method, the transduodenal route is the proper approach. It is not as serious an operation as it may appear to one who has not yet done it.

That the cholecystostomies have as large a mor-



Specimen removed at operation. Gallbladder carcinoma invading the adjoining liver area.

If the anatomy is not definitely recognizable, it is best to free the gallbladder from the fundus inward. The risk of injuring the hepatic duct or other structures is considerably lessened. At times the anatomy is so much blurred that one is forced to cut the gallbladder open on its under side after tapping it, and then to crawl along the cut edge with forceps until one has the cystic duct with its valves before the eyes.

At times a stone may be as though grown into the wall of the common duct and can hardly be

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*Case reported in October number of "Surgical Clinics of North America," 1923.

Two more words concerning malignant changes. Apart from a very few fortunate recoveries for various, mostly short, periods of time after excision of a small carcinoma of the papilla of Vater, the chapter of malignant disease of the bile ducts is an exceedingly hopeless one. The diagnosis is quite often not definite as to exclusion of an obstructing calculus. The diagnosis may remain uncertain even after operative inspection, which in the presence of severe icterus and a poor general condition at times cannot be sufficiently deliberate. Drainage of the gallbladder in malignant disease may relieve an intolerable itching and bring some deceptive hope, but rather hastens the end through loss of body fluid. An anastomosis between gallbladder and intestine avoids this latter and the great discomfort of an external fistula.

Carcinomata of the gallbladder, if caught by accident at an early date, may be completely eradicated. The cases reported were mostly gallbladders removed for other reasons, where a small carcinoma was detected afterward in the specimen.

A rather advanced carcinoma of the gallbladder we removed by resecting the liver. The neoplasm had started at the fundus and had grown into the adjoining liver tissue. The area of the cystic duct was, however, free. A triangular piece of liver tissue was removed with the gallbladder; it had a base at the liver edge of 10 cm. and a height of 9 cm. After a smooth operative recovery the patient did pretty well for a while, but soon showed signs of implantation tumors in the bottom of the pelvis (Krukenberg tumors), and died nine months after the operation. Locally the condition had remained good.

DISCUSSION ON THE FOUR PRECEDING PAPERS—

DISEASES OF THE GALLBLADDER

EVARTS A. GRAHAM, M.D. (St. Louis): I feel highly honored at being asked to come here and participate in this symposium. There is nothing that is of more interest to me, and I feel that the subject is a very live one to everybody. I feel particularly that any additional light that can be thrown on the subject of cholecystitis and its various complications is of the utmost importance because it is such a common complaint. We are much more interested, of course, in the common things that we are in the rare and unusual things. My interest in this matter began in 1916 and then I was interrupted somewhat by the war. I took it up again subsequently to the war and have followed it ever since.

I feel that no rational therapy of these conditions can be undertaken unless we have a proper conception of what

it is all about; in other words, of the pathogenesis of the condition, the pathology involved, and so forth; because, of course, a rational therapy is always based on such findings. You are familiar, of course, with the common conceptions of the origin of cholecystitis and its complications; and remember, of course, that the first ideas that were expressed were that bacteria got up the common duct and then got into the cystic duct and then into the gallbladder. Originally it was supposed that they got up there through the lumen of the ducts; that the bacteria swam up against the current of the bile and got into the gallbladder. Somewhat later, along about 1890, Birch Hirschfeld advanced the idea that bacteria are washed down in the bile from the liver into the gallbladder. Particularly through the work of Rosenow, and simultaneously with him, I might say, but from a somewhat different angle and entirely independently, the work of Koch brought evidence to show that cholecystitis very frequently is due to a blood stream infection involving the wall of the gallbladder through the cystic artery. We know, also, that the gallbladder may frequently become involved by contact with an inflamed ulcer.

It has been an old observation, of course, that cholecystitis is a comparatively frequent late complication of typhoid fever. Koch, the man to whom I referred a minute ago, concluded that the typhoid cholecystitis was due to aneurysm in the wall of the gallbladder with typhoid bacilli. It is a curious thing that Osler, in a series of fifteen hundred cases of typhoid fever which he reported from the wards of the Johns Hopkins Hospital, found only seventeen instances of cholecystitis coming on while the patient was in the hospital suffering from typhoid fever. Rolleston, in his classical book on diseases of the liver and the gallbladder, states that cholecystitis is rare during the course of typhoid fever.

These views are of particular interest because if bacteria infected the gallbladder by coming in contact with the mucous membrane one would expect that cholecystitis would occur in nearly a hundred per cent of cases of typhoid fever; for it is well established that in cases of typhoid fever the bile is swarming with bacteria at all times, and certainly after the first few days. There is therefore plenty of chance for any case of typhoid fever to develop cholecystitis if the explanation of it would be merely a contact infection with the mucous membrane.

Unfortunately, it has happened that most of the work on the pathology of cholecystitis up to within the last very few years has been concerned almost entirely with the study of the mucous membrane of the gallbladder. This unfortunately has been the case not only with the pathologist but with the surgeon as well. Indeed, forms of therapy have been advanced based on that idea. Matters of diagnosis, also—as were alluded to by Dr. Schneider—have been based on the assumption that it is the mucous membrane part of the gallbladder which is chiefly involved in any given case of inflammation. A simple microscopic examination of a fairly large number of gallbladders removed at operation showed us the very obvious fact—which I think everybody is agreed to now—that it is not the mucous membrane which is solely involved in cases of cholecystitis, or, indeed, it is not the mucous membrane which is chiefly involved in by far the majority of cases. The chief inflammation in the

vast majority of cases of cholecystitis is in the wall away from the mucous membrane, in the part of the wall at the periphery of the gallbladder. I do not think there can be any possible question about that at the present time.

Therefore the fact that we find microscopic evidence of the inflammation being away from the mucous membrane and the fact that in cases where we know the bile is swarming with bacteria cholecystitis is comparatively infrequent, forces us to the assumption that an ordinary infection of the mucous membrane by contact with bacteria must be relatively rare. When we put this to the actual experimental test we find again that it is relatively impossible, in animals at least, to infect the gallbladder by putting bacteria—even tremendous doses of bacteria—directly into the lumen of the gallbladder. The only way that we can produce a cholecystitis by this means is to injure the gallbladder first or to prevent its drainage by ligature of the cystic duct. If we injure the gallbladder—either by putting in a foreign body or by interfering with the circulation, by ligating the cystic artery—then we can produce a cholecystitis by the direct injection of bacteria. Otherwise it is practically impossible to do so.

So we must seek some other explanation for the pathogenesis of cholecystitis than merely infection caused by bacteria being in contact with the mucous membrane. I have already alluded to the constructive work of Rosenow on this point. Without going into too much detail we are able to bring forward a great deal of evidence—which has already been alluded to by Dr. Ritchie this morning—to indicate that there is a very easy explanation of the pathology which we see in cholecystitis if we simply bring into play the lymphatic channels as possibilities of transfer of infection; in other words, if we simply bring the field of cholecystitis into the well known laws of the spread of inflammation in other parts of the body. It is not necessary to assume any fanciful idea or theory. We need merely bring cholecystitis into the same category as infections elsewhere in the body. We know that they spread and are transferred by way of the lymphatics. How can we do that? We can do it very simply. First of all, we find that there is a very intimate lymphatic anastomosis—the results of which also have been alluded to several times this morning—between the gallbladder, the liver, the pancreas, the common duct, and to some extent also the stomach and duodenum. We find also that when we examine the liver in cases of cholecystitis, if the cholecystitis is definite we find evidences of inflammation in the liver, usually only microscopic evidence. If the condition has been chronic, though, we find gross evidence. The same is true of the pancreas.

It is an interesting thing that clinically—as has been called attention to repeatedly—there are many types of lesions which are associated with cholecystitis. We already mentioned typhoid fever. Another one which has been well recognized and frequently commented on is appendicitis; another one is ulcer, peptic ulcer of either the stomach or the duodenum. Some cases of acute cholecystitis have been described as occurring while the patient is suffering from hemorrhoids. Cases of dysentery also have been associated with definite attacks of cholecystitis and have been reported as such in the literature from time to time.

There is one interesting connection between all of these things, of course, and that is that all these are lesions which involve parts of the body which drain into the portal system. It is therefore easy to imagine that virulent bacteria can be carried to the liver and there set up an inflammation; and the inflammation can very easily be transported to the gallbladder by way of the lymphatics, simply in accordance with the rules of inflammation elsewhere in the body. This idea differs radically from the idea which Birch Hirschfeld expressed—to which we have already referred—in that it explains the interstitial type of inflammation of the gallbladder which we usually find and does not have to consider the cholecystitis as being one which starts in the mucous membrane and then invades the gallbladder. Experimentally, it was easy to put this matter to a test and to find that the conclusions had experimental basis for their assumption; namely, if bacteria are injected into a radicle of the portal vein in an experimental animal it is very easy to produce a cholecystitis of the same kind that we find clinically; that is, a cholecystitis which begins at the periphery of the gallbladder, beginning usually also in the lymphatics of the periphery of the gallbladder, easily demonstrated, involving also the liver, the common duct, and the pancreas. Similarly, when we examine the small pieces of liver, as we have done repeatedly—from cases of appendicitis, for example—in which there has been no evidence of cholecystitis clinically, we can find microscopic evidence of inflammation within the liver.

A further observation that is very valuable and that bears on this point is the observation made by Meyer and his associates at the University of California about two years ago in a very comprehensive study of the question of typhoid carriers. They took up the question of typhoid cholecystitis along with the typhoid carriers; and they found in their autopsy experience and also in some experimental work on animals, that they never got a cholecystitis unless they had an actual, demonstrable, anatomical lesion in the liver. They go even further and they say that they consider that the typhoid bacillus cannot pass through an unchanged liver. It cannot be secreted, in other words, as bile is secreted or as some other substances can be filtered through the liver. That cannot happen. There must be an actual, demonstrable lesion; then, of course, it is very easy to assume that that actual, demonstrable infection will travel by way of the lymphatics; and it will of necessity therefore strike the gall-bladder and set up an inflammation there, if the inflammation is sufficiently virulent.

Some of this, of course, is old stuff, and we are all familiar with it. I do not wish to go into it in much detail here this morning, but merely mention it as it has a bearing on certain remarks which I wish to make a little later.

We do not assume, of course, that every case of cholecystitis is to be explained on the basis of a lymphatic infection from a previous existence of a hepatitis. We merely wish to call attention to the fact that this is a possible route of infection and that it may explain many cases. When we bear this possibility in mind it may serve to explain many results which we get, much of the rationale of the therapy. When we recall this picture of the lymphatics, for instance, we find this intimate anastomosis

between the liver and the gallbladder; and we find when we subject it to experimentation—that is, by direct injection of the lymphatics—that we can make the stream go either way. We can make the lymphatics of the gallbladder distend when we inject the liver with a substance like Prussian-blue, or we can make the lymphatics of the liver distend when we inject the gallbladder with Prussian-blue.

There is therefore a vicious circle which is established and must be confronted in cases of cholecystitis. As long as the gallbladder remains infected it must be constantly reinfecting the liver. We cannot, of course, from a therapeutic standpoint, break this circle by direct attack on the liver; but we can break the circle by direct attack on the gallbladder. If we grant that the majority of cases of cholecystitis are interstitial in type, and are not confined to the mucous membrane, then the only way by which we can hope to break up this vicious circle is to remove that part which is capable of being removed; and that, of course, is the gallbladder itself and nothing else. Clinically, I think the results speak for the rationale of this explanation, for cases in which the gallbladder is removed certainly get along better than cases in which it has not been removed, in the vast majority of cases.

Dr. Ritchie spoke of the value of the removal of a piece of liver at the time of operation from the standpoint of diagnosis. I am very glad that he feels as he does about this, because it has been my practice for a number of years to do this as a routine, except in cases in which great haste was desired or something of that sort. I would supplement his remarks by saying that I think it gives much information also as regards the prognosis of the case, because it has been our experience that where we find marked changes in the liver the patient is less likely to make a good, permanent recovery than is the case where the lesion in the liver is less. Furthermore, it throws an important light often on doubtful cases. This may be forcibly illustrated by an instance which happened to me only last week:

A middle-aged colored woman came into the out-patient department, acutely ill with nausea and vomiting, complaining of great pain and tenderness in the right upper quadrant of the abdomen. She was intensely jaundiced. In spite of the fact that she was a very black colored woman, her friends had noticed that her eyes were very yellow; and they had commented on the fact. Her urine showed a large amount of bile and also contained a considerable amount of albumin. She had a moderate amount of fever and a slight leucocytosis. We admitted her to the hospital. She was a rather fleshy sort of woman and it was difficult to palpate her satisfactorily; but we could make out a marked tenderness in the region of the liver. This was the first severe attack of this sort that she had had, though she gave a history of having had dyspepsia and indigestion over a period of many years. We felt that the diagnosis probably lay between a stone in the common duct and a marked inflammation of the liver, possibly syphilitic. We did not feel that malignancy was much to be considered, because of the acuteness of the onset and the marked symptoms which she presented. She gave a positive Wassermann reaction but because of her intense jaundice we did not know how much weight to place on that. We decided that the best thing to do for her was

to put her in bed in the hospital for a while and wait to see if her jaundice would not clear up a little and then get at her a little more vigorously with the intention of an exploratory operation to see if she did not have a stone in the common duct.

That plan was carried out and she improved from day to day very markedly. After ten days in the hospital her jaundice was almost completely gone; her vomiting had ceased; her temperature had come down to normal; and she was very greatly improved in every respect. Her Wassermann was still positive, but because we find in St. Louis that many of the negroes have positive Wassermans we do not place the same significance on it that we do in white people. We advised exploration and carried it out. We found a perfectly normal looking gallbladder, normal color, no adhesions, nothing to be felt in it. We put our finger in the foramen of Winslow, palpated the common duct as far as we could and felt nothing. We examined the liver and found that there was considerable difficulty in seeing the liver because it was very small. It was only about half the size of the normal liver, I should say. She had a contour such that it was difficult to see the liver as well as we should like to have been able to see it. When we put our hand up over it, however, we were impressed with the small size of this liver. We were impressed also with the fact that instead of having much thickening, much fibrous tissue in it, it was everywhere soft, edematous. What did that mean? Obviously, here was a case in which the liver was atrophied, without cirrhosis, in a woman with jaundice; that could mean only one thing—at least we so interpreted it—that she had an acute yellow atrophy of the liver which was improving. We took out a piece of the liver for confirmation, and the microscopic examination of this liver showed a typical picture of acute yellow atrophy of the liver which was healing. There was still some necrosis left in the lobules; but there was marked regeneration of liver tissue everywhere. So undoubtedly this was a case of acute yellow atrophy which was healing and which we were able to confirm absolutely by removal of a small piece of the liver tissue, without any deleterious effects on her; at least, she has continued to improve steadily ever since.

It is of interest that when we came to examine her more closely we got some additional history which we did not get before; namely, that she had had an injection of salvarsan elsewhere two weeks before she presented herself at the hospital; and that this attack of nausea and vomiting and jaundice began twenty-four hours after the salvarsan* injection. So I think we were dealing then with a perfectly typical instance of an acute yellow atrophy of the liver induced by salvarsan, very similar to what one gets with phosphorus poisoning, chloroform poisoning, and various other things. It would not have done her a particle of good to have removed that gallbladder, of course, because the gallbladder was not at fault. It had nothing whatever to do with her condition. We made the diagnosis from the appearance of the liver and confirmed it by removal of a small piece.

*I do not know what preparation of salvarsan was used, whether a German or American preparation.

I might go on and elaborate other instances here similar to that; but it would only take up time and not be particularly instructive. I am afraid I am exceeding my time somewhat, but there is one other thing which I do wish to mention briefly and that is: If we think of cholecystitis and its complications as a disease which very often begins in the portal system and then involves the liver secondarily to make a hepatitis, it behooves us, of course, in every case of cholecystitis to examine the portal system very carefully for a lesion. In my own practice I do almost as a routine perform an appendectomy on these cases because I feel that the majority of cases of cholecystitis probably have their origin in the appendix. This may be only an opinion which will not be confirmed; but it is a very simple matter, of course, to take out the appendix in the ordinary case of cholecystectomy and I see no reason why it should not be done.

PRESIDENT JUDD (Rochester): I did not hear all of the symposium but I had the opportunity to hear the last part of it, and want to say that I have been very much interested in Dr. Graham's work for a number of years,—since the time that he took up the study of the etiology and source of infection in cases of cholecystitis. At the American Medical Association meeting last spring, I reported a group of 24 cases which I believe have some clinical bearing on the experimental work that Dr. Graham has been carrying out. These patients had all had a cholecystectomy for cholecystitis, but had had a continuation or a recurrence of their symptoms, varying from three months to seven years after cholecystectomy; of course, the late cases had not had time to clear up.

The most common cause of a continuation or recurrence of symptoms after removal of the gallbladder, in our experience, has been either overlooked stone in the common duct or calculi which formed after the cholecystectomy. And we have operated upon many cases with exactly the same clinical picture and found stones in the common duct. The twenty-four cases that I mention stand out because, without stones they gave exactly the same clinical syndrome, and make it difficult to explain the cause of the trouble. In each instance the common duct was opened and the probe apparently passed freely into the duodenum, and in spite of a most thorough investigation, we were unable to find an explanation for this continuance or recurrence of symptoms. In each instance we put a Mayo-Robson drain in the hepatic duct and drained all of the bile in this way for about three weeks; and the interesting point is that seventeen of the twenty-four cases were apparently permanently relieved.

I do not know that our interpretation of this series of cases is correct, but I call attention to it in connection with the work which Dr. Graham has done, as pointing to the fact that we are dealing with something besides cholecystitis in these instances; that is, a persisting infection. We believe that the cause of the continuation or recurrence of symptoms was the infection that remained in the liver or pancreas after the gallbladder had been removed; and that secondary drainage of the common duct apparently permanently relieved two-thirds of the cases. Of course, this may be rather far-fetched. I do not know that we have

enough evidence to warrant a decision, but this seems to be a series of cases that clinically might bear out some of the experimental work that Dr. Graham has done.

DR. A. T. MANN (Minneapolis): I have been very greatly interested in the papers and especially in the work which Dr. Graham has been doing for some years and which he has brought so nicely before us. While I was doing work on returned soldiers we came to a group of cases in which a diagnosis had not been made or in which we thought a wrong diagnosis had been made. Of these cases we looked over more than 250, and in deciding the diagnosis of the first of them we had considerable difficulty. Some of them had had a diagnosis made of ulcer of the duodenum, ulcer of the stomach—none of them of gallbladder—some of them of chronic appendicitis; some of them of epigastric hernia. We selected a few of the most characteristic of the cases which had been very thoroughly studied by test meals and by the x-ray and physical findings. Some of these cases had been under one or more courses of treatment in the hospital for ulcer of the duodenum.

We found in the first place that many of them had the high hydrochloric acid curve. We noted a difference between the high hydrochloric acid curve in these cases and in those of actual, demonstrated ulcer cases. In these specimens, taken every fifteen minutes after a test meal, the hydrochloric acid in both of them rose soon after the meal, so that by an hour, half an hour or two hours after the meal the hydrochloric acid content reached its maximum. However, in the cases of actual ulcer it would continue with more or less variation until the next meal, when it would drop. In these cases it had reached the maximum and would go down and be down before the next meal. So there is a difference in the hydrochloric acid curve.

The x-ray findings were largely interesting because of their negative type to disprove the presence of ulcer, of adhesions, and of things of that sort. A few of these cases presented a little tenderness over the gallbladder and we decided that we would do an exploratory operation on the first one. We found a decidedly diseased gallbladder. Encouraged by this, we looked over another series of about twenty. In making our diagnosis sometimes it would lead one way and sometimes another; so that in order to get some working basis we made our diagnosis in percentages. We would make a diagnosis, for instance, in one case of 75 per cent gallbladder, 50 per cent chronic appendicitis, 5 or 10 per cent of ulcer—just to keep it in the field. To make a long story short, we have run through about sixty of these cases in the operating room, and not one of these cases in which the diagnosis of cholecystitis has been 50 per cent or more has failed to show the chronic cholecystitis. We have taken a great many specimens of liver—we do that practically as a routine—and in many of these cases the liver shows such gross changes that it is very distinct to the eye. In a few of the cases the changes were not apparent to the eye but were evident under the microscope.

DR. EDWARD EVANS (La Crosse, Wis.): I have been in the field of diagnosis of gallbladder disease for a very long time and subsequent operative work, having done my first

operation for gallstones in 1891. I was impressed today by two things: first, by the paper of Dr. Schneider on diagnosis, because in that paper he urged on us the great importance of clinical history and taking into consideration the whole patient, not alone the digestive system. It shows what a great advance has been made in gallbladder diagnosis and surgery. In the early days we operated only on definite cases of cholelithiasis. Now, fortunately, surgery has gone back a couple of decades and gets those patients when they can be cured—often before gallstones are formed.

The other thing that impressed me was the charming and illuminating demonstration made by Dr. Graham, putting the surgery of the gallbladder apparently on a definite, accurate, scientific basis.

DR. THEO. BRATRUD (Warren): There is just one thing I would like to make a remark about. That is this controversy regarding the closure of the cholecystectomy or whether it should be drained. I closed several and had a very nice convalescence; but after doing about twelve or fifteen I had two cases that did not do so well and I had to reopen the abdomen and drain and did not lose the patients. Some time ago I was in Cleveland and I noticed Crile closing his cholecystectomies. A few months later I noticed he was putting in a little rubber drain. When I asked him why, he said that he had some fifty of these cases without drainage that did very nicely, but he lost one that he thought he would not have lost if he had drained that wound. I have seen several men who took up the closure of cholecystectomy wound, who thought it was a very nice thing for a short time; but after practicing that method for some time they changed their minds. Should my gallbladder have to come out would want a drain to the end of the cystic ducts.

DR. A. MACLAREN (St. Paul): There are many interesting features in this discussion and I agree with Dr. Graham's suggestion—that it is hard to know where to start. Dr. Bissell has presented a number of slides showing the depression in the duodenal cap produced by a distended gallbladder. My experience is, that the distended gallbladder is the easiest type to diagnose. I have seen a number of single radiograms showing a depression of the cap but no clinical examination gave the feel of a distended gallbladder. My personal belief in these cases is that the roentgenologist "was working his imagination." A radiogram is only a snapshot; if you have a number of these snapshots a sort of a moving picture or the fluoroscopic screen, and find the outside depression remains, then your diagnosis is practically safe. Stones are more frequently shown with us since using the Potter-Bucky Diaphragm. When you know the stones are there, but cannot demonstrate them with the ordinary x-ray technique, the use of the diaphragm will many times show the gallstones in an unmistakable manner. I think we are generally coming to the conclusion, in the acute gallbladder, that there is a certain type, a very virulent form of cholecystitis that ought not to be removed. If a removal is made and a raw surface under the liver is left, apparently, the absorption directly into the circulation is very rapid and the patient goes to pieces and dies very quickly. Dr. Farr

has helped us with our local anesthesia. This type of case—especially the very sick ones—can be opened and drained under local anesthesia in a very satisfactory way.

DR. J. P. SCHNEIDER (Minneapolis): I would like to make a little closing remark. Seven or eight years ago, when we were studying rather fully the question of the spleen and its pathology and the possibility of attacking it surgically, I made the statement that there were certain types of patients with pernicious anemia in whom splenectomy was the proper thing. The result was that a great many spleens were removed by surgeons in their enthusiasm, on the strength of that statement. Now the same question is going to come up with relation to cholecystectomy.

If we are correct in our conception of pathology and its development, what we must do is to operate the gallbladder earlier; but there is danger that every patient with a pain in the right hypochondrium will be subjected to cholecystectomy. I therefore again make a plea for a comprehensive study of these patients. I think it is the only thing, because again and again the surgeon will dismiss one of these cases as a cured case whereas they really are not cured. Half our troubles with these patients is that they are never well again afterward; and they could have been well in all probability if a great deal of the advance pathology could have been attended to ten years earlier.

With reference to Dr. Graham's work on the lymphatics, if we will bear in mind the work done by Boyd lately and read that in conjunction with his, I think we will get at least a very novel idea of how gallstones are actually formed. Dr. Boyd has shown that there are a great many so-called "strawberry" gallbladders which the surgeon cannot see with the naked eye. There again I bring another plea; namely, that the internist who has studied the patient be at the table when the surgeon operates; because many times a surgeon cannot determine whether the gallbladder ought to be removed; and the determination will depend upon the knowledge of the internist of the entire patient at the time.

DR. R. E. FARR (Minneapolis): I feel a good deal as the little boy did when the farmer advertised for help. A number of fellows lined up and the farmer inquired what each one could do. One fellow could pitch more hay and husk more corn and so on; someone else could do some other thing better than anyone else. By the time he reached the little boy, they had covered the whole field of activities on the farm; and the little boy said: "There isn't a darn thing left for me to do!"

I just want to compliment the essayists on the many points brought out. I think Dr. Schneider has given us a very comprehensive review of the diagnostic points that we must have in mind. I believe that if we had more internists making the suggestions that he has made here today, and if these were really carried out, we would have a much better opportunity to operate upon these patients earlier. That is very important.

With regard to the operative technic I have very definite and decided convictions. As long as the scientific discus-

sion has covered the fundamentals we might as well spend just a moment upon the superficial things, to remove the necessity for heavy thinking that we have been going through. I believe that the incision for gallbladder work should be adequate; that is, we should have exposure, and that we should traumatize the tissues less than we have in the past in carrying out the operation. It seems to me that the surgery of the future will demand this. Whether the appendix should be removed or not is a question. Personally, I would rather favor doing only the one operation unless the appendix has shown evidence clinically of being diseased. We believe in removing the gallbladder fundus first, attacking the part of it that presents. We believe in upending the liver, rotating it *inside* of the abdomen rather than lifting it *out* upon the chest. We believe in leaving a large amount of the gallbladder peritoneum and in using the very finest material for ligating the cystic duct. Although we have not a large percentage of cases where we have not instituted drainage, we have no case in which we left out drainage that gave us any trouble. The results were better in those cases; the postoperative convalescence was more smooth than in the cases where we drained.

I believe that there is something in Richter's teaching with regard to this matter. Personally, I do not see why we should drain after cholecystectomy any more than we should after appendectomy; although I believe today I might want drainage put in if my gallbladder were removed. Still, I think the difficulty is that we do not know just how to handle the tissues. As soon as we learn to take care of the tissues—say, for instance, as Richter does—I do not believe we will be draining many gallbladders after removal in the interval stage.

DR. FRANK BISSELL, Minneapolis: I merely wish to restate and emphasize one or two points made in my paper, and to answer Dr. MacLaren's criticism. While the x-ray examination does not at the present time hold a major position in the diagnosis of gallbladder disease, it does nevertheless have a place of considerable importance. Dr. MacLaren says that cases showing duodenal depressions, as illustrated by the slides, are easily diagnosed by palpation or other clinical methods, since the gallbladders are always large. This is not necessarily true, since the ability to indent the heavier filled duodenum seems to result from a thickening of the bladder wall, with its resultant loss of resiliency, rather than from actual enlargement. It is true that such depressions occur only in exceptional cases. They are chosen for lantern slide illustrations simply because they are outstanding characteristics and will reproduce, whereas the faint but more frequent gallbladder shadows will not. Certainly it has not been my observation that cases which lend themselves to x-ray diagnosis are easily recognized by other means. Most of the cases included in my series have been picked up in the course of routine x-ray examinations for suspected gastro-intestinal lesions. The important thing is to evaluate properly each roentgenological sign of gallbladder disease, and then consider it in conjunction with clinical evidence. It is surprising how frequently one is able to demonstrate the pathological gallbladder in the roentgenogram if he makes a sincere and painstaking effort to do so.

DR. HARRY P. RITCHIE (St. Paul): If we interpret surgical diagnosis to mean a review of the gallbladder area as to the degree and kind of disease present, then this study is really the critical situation in the treatment of the individual case. The evidence and the suggestions of the internists indicate that we should anticipate our usual operations by ten or more years. We will surely increase the number of border line cases where it will be difficult to determine not only the degree, but whether the gallbladder is affected. Therefore, I think that we should take into consideration all of these wonderful presentations made here because it is a newer field of diagnosis and thus prepare ourselves for the future. I do not want it understood that I have as a form removed a piece of the liver for examination, but believe it proper to do so, as I have never seen a penalty for so doing.

DR. ARNOLD SCHWYZER (St. Paul): I should like to use the last few minutes by showing a few lantern slides just to demonstrate a little thing. It may be a little improvement that might help some under difficult conditions where you have a very jaundiced patient—say a carcinomatous case—and you want to do a cholecystenterostomy. For instance, I have a patient at the hospital now. He had always been well, but three weeks before he came he had an acute attack of pain and became jaundiced; so that the history looked entirely as though it was a stone in the common duct. He was an elderly man and he had a very large gallbladder. We left the diagnosis open, whether it was a stone or carcinoma. It came on in a deceptive way. When we went in, he had such a large gallbladder, so tense, that nothing could be done unless we first tapped that gallbladder. After that gallbladder was tapped we found there was not a stone, but a carcinoma. Now we had an open gallbladder and the suture would not hold with that pressure back in the gallbladder. For that reason something had to be done. We thought if we only made a cholecystostomy the patient would lose so much body fluid that we would really have gained nothing, though we would have relieved the itching. We would have relieved the patient's mind by giving him some wrong hope; but we would not have done any real good. First, two catgut sutures were uniting the duodenum to the gallbladder of a distance of one inch. We then inserted a metal rod into the troicart opening and used this as a splint for the cholecysto-duodenostomy. The mucosa was nicked over the tip of the rod and a small opening was made into the duodenum. The metal rod was quickly pushed into it and thus plugged the opening and prevented leaking. No clamps were needed. The two catgut sutures were then whipped over the middle portion of the gallbladder. A catheter then replaced the metal rod, which had been useful in holding the parts well fixed and presented and which had plugged the openings against leaking.

DR. EVARTS A. GRAHAM (St. Louis), closing: I have nothing to add, Mr. Chairman, except to say that I think this is the most interesting symposium on gallbladder disease that I have ever attended. I wish to extend my compliments to the essayists who have presented these very interesting papers.

RECURRENT ULCER OF THE STOMACH AND DUODENUM: CLINICAL NOTES ON INCIDENCE, DIAGNOSIS AND ETIOLOGY*

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Recurrent or secondary ulcer of the stomach or duodenum is one of the most interesting, as well as the most unusual, complications following operation for benign gastroduodenal lesions. In a previous article¹ I discussed the delayed or late sequelae in which the recurring symptoms are usually painful, and identical with or similar to the symptoms for which the patient originally sought relief. The four main underlying causes, especially after gastro-enterostomy, are, in order of frequency, reactivity in the original partly healed or unhealed ulcer, gastrojejunal or anastomotic ulcer, the formation of a new or recurrent ulcer in the stomach or duodenum, and carcinomatous changes in gastric ulcer. These four possibilities must be borne in mind by diagnostician and surgeon in cases in which there is a recurrence of distressing or painful gastric symptoms, usually months or years after operation.

During a period of seventeen years (from 1905 to 1922 inclusive), thirty-seven patients with recurrent gastric or duodenal ulcer were examined in the Mayo Clinic, for thirty-three of whom a second operation was performed. Nine of these patients were females. During this time approximately 7,000 operations for chronic gastroduodenal ulcer were performed. Obviously this complication is relatively rare. Four patients with characteristic syndromes, confirmed by the roentgen ray, were treated medically. A diagnosis of recurrent ulcer was made in a number of other patients but they did not remain for treatment. The cases were classified in three groups: (1) eight cases in which gastric ulcer had apparently developed after successful gastro-enterostomy for duodenal ulcer; (2) eighteen cases in which gastric ulcer had recurred following primary operation for gastric ulcer, and (3) eleven cases of duodenal ulcer recurring after operation for duodenal ulcer.

Group 1.—The type of case in this group is of

especial interest to surgeon, internist and bacteriologist. The appearance of an apparently new gastric ulcer in the presence of a normal functioning gastrojejunostomy admits of considerable speculation. I have reported² one such case in which the gastric ulcer was active, benign, and penetrating in spite of good motor function, the persistent absence of free hydrochloric acid, and a healed duodenal ulcer, as shown at the second operation. The ulcer may have existed at the time of the original operation and been overlooked by the surgeon; in fact it would be difficult convincingly to disprove such a contention. In 6 per cent of cases of duodenal ulcer, according to our surgical statistics, chronic gastric ulcer is associated. Moreover, chronic benign ulcers of the lesser curvature, above the incisura, may occasionally persist and even rarely progress to hour-glass deformity after successful gastrojejunostomy. This fact, and the potentiality for malignant transformation or hemorrhage have made it necessary routinely to remove such ulcers by cautery or knife. But it might be argued that the ulcer most probably did not exist at the time of the original operation, since an experienced surgeon or a competent roentgenologist could hardly overlook a chronic calloused lesion, usually associated with a crater formation in the stomach. Following the primary operation, the eight patients in this group had periods of complete relief, varying from three months to eleven years. Five of them, however, had a postoperative recurrence of symptoms within an average period of nine months. As one would expect following gastro-enterostomy, the acidity of the gastric contents, and motility were within normal limits, except in two patients who had coincident ulceration at the stoma. Six of the patients, including the two just mentioned, had evidence of marked focal infection in teeth and tonsils, especially the teeth.

Group 2.—There were eighteen patients in this group. Eight, including those who experienced no relief after the original operation, had a recurrence of symptoms within a year. Seven, however, had complete relief for from three to five years. In contrast to the patients in Group 1, however, increase in gastric secretion and titer, and impaired motor function were much more pronounced. In two instances gastrojejunal ulcer was associated. A recurrence of the ulcer at the site, or in the scar, of the original lesion was frequently noted by the

*Read at the Minnesota State Medical Association, St. Paul, October 11, 1923.

surgeon. Accurate records of the condition of the teeth and tonsils were obtained in fifteen of the eighteen cases. In thirteen there was advanced periapical disease, some pyorrhea, or tonsillar sepsis, or variable combinations of such foci. The primary ulcer was excised or resected in all, excision alone was performed in five, and excision, with some form of plastic operation, was performed in six. Gastro-enterostomy, with or without excision, was performed in six cases, in two of which there was an anastomotic ulcer besides the recurrent ulcer.

Group 3.—The eleven patients in this group who had duodenal ulcer that recurred after operation, had clinical features similar to those in the cases in Group 2. Excision was performed with or without an associated plastic operation in eight cases, and in three gastrojejunostomy; one of these patients also had a recurring gastrojejunal ulcer. Five of the eleven patients had a recurrence of symptoms within one year after operation, two of whom experienced no relief. Two had complete relief for four and five years, respectively, the latter having had simple excision. Hyperacidity was present in all; in six there was definite retention and hypersecretion, five of whom had had an excision, with or without a plastic operation. Since nineteen of twenty-nine patients in Groups 1 and 2 (65 per cent) had had excisions, it may be inferred that the plastic type of operation occasionally invites local recurrence with the associated gastric secretory and motor derangement, but it does obviate the possibility of an anastomotic or jejunal ulceration. I have shown³ that the odds are still in favor of the patient who has had gastrojejunostomy.

SYMPTOMS AND DIAGNOSIS

With few exceptions, the symptoms engendered by the recurrent lesions were identical with those of the original complaint, having the familiar characteristics of an ulcer syndrome. Two patients with gastro-enteric hemorrhage without the associated ulcer type of pain or distress had secondary operations, when new or recurrent lesions were discovered. In fact, hemorrhages occurring as a new phenomenon in ulcer-bearing patients some time after operation are invariably the result of a new ulcerative process, acute or chronic, and if of the latter type, are situated either at or beyond the anastomosis, if there is one, or in some other por-

tion of the viscus. The diagnosis or recognition of these secondary lesions is not so difficult as formerly, thanks to the invaluable aid afforded by the roentgen ray and the proper interpretation of findings by the experienced roentgenologist. While the clinical evidence for an active ulcer may be conclusive, this often may be rightly interpreted as reactivation of the primary ulcer, particularly in the large group of duodenal ulcers, for which gastro-enterostomy has been performed. Moreover, localization of a new ulcerative process can only be determined, as a rule, preoperatively by means of the fluoroscope and roentgenogram, or at operation by the exploring fingers of the surgeon. With two exceptions the roentgen evidence concerning the patients in Groups 2 and 3 was quite decisive. In Group 3 (the series of cases of recurring duodenal ulcer) much depended on the purely clinical data, because a deformed duodenal bulb usually persists after complete healing of the ulcer, or it may be the result of the surgical procedure. It is obvious that criteria other than roentgenologic were necessary in this group in order to reach a proper diagnosis, and to institute rational treatment. W. J. Mayo, a number of years ago, and Judd, more recently, have emphasized the fact that contact or multiple ulcers of the duodenum are common, and that those on the posterior wall may be overlooked. This possibility must be borne in mind in such cases if symptoms are persistent or recurrent.

CAUSAL FACTORS

The question naturally arises, what are the predisposing and causative factors of recurring ulceration of the gastroduodenal mucosa, and may not these cases afford new or additional evidence concerning the etiologic factors in the formation of ulcer? The theory that infection is the cause of ulcer is admittedly the only tenable one at this stage of medical progress. Corroborative clinical data indicating causal relationship between foci of infection and systemic disease are not lacking. This is as true of diseases of the gastro-intestinal tract, as of those of the endocardium, kidneys and joints. The seasonal incidence of exacerbations or onset of a primary attack of peptic ulcer occurs during the months when tonsillitis, sinusitis and respiratory affections are most prevalent. Fatigue, chill, exposure and so forth are predisposing factors, when the resistance of the host is temporarily lowered. Symptoms of ulcer sometimes first be-

come manifest within several weeks or months after devitalization of teeth. Exacerbations of the ulcer are coincident with extraction of infected teeth or tonsils, or with exacerbation of infections in these structures themselves. The epidemics of influenza have been followed by a marked increase in inflammatory lesions of the digestive tract, including the biliary apparatus, pancreas and appendix, or by an aggravation of symptoms in organs involved prior to the epidemic. This may be explained by factors inherent to this infection, or more probably by the influence of existing foci, due to the coincident lowered resistance of the individual. The radical removal of all possible foci has repeatedly caused subsidence of gastro-intestinal disturbances, and evidence of increased healing of an otherwise refractory ulcer. Persistent gastric malfunction without demonstrable local lesions has ceased after removal of septic or abscessed tonsils, or devitalized teeth with periapical disease, or after drainage and treatment of a suppurating sinus. Suppurative gingivitis, the result of extensive pyorrhea, provokes an infectious gastritis, and if not taken care of in time, may result in permanent damage to the gastric glandular tissues. On the other hand, infection that is sealed in, and under tension undoubtedly produces embolic focal lesions of the digestive tract through the blood stream. In all of the patients in this series possible intra-abdominal foci, especially in the gallbladder and appendix, were removed at the primary operation. The records were complete as regards foci in teeth, tonsils, sinuses, prostate, adnexa, and so forth, in all but five patients. Twenty-nine of the remaining thirty-two harbored extensive foci, especially in the teeth or tonsils, or both; this fact appears to be more than a mere coincidence.

Rosenow's researches seem to prove that many, if not all, ulcers of the stomach of man and of domestic animals, are associated with a streptococcal infection in the ulcerated area, that foci of infection, such as the tonsils and teeth, harbor the streptococcus and predispose to ulcer and that, when isolated from the ulcer and from the distant focus, the streptococcus has elective affinity for the stomach, producing hemorrhage and ulcer on intravenous injection. Rosenow has recently maintained specific infecting power and specific immunologic properties in the streptococcus isolated. From time to time I have referred patients to him for

bacteriologic study, who had active lesions and foci suspected of causal relationship. The findings have almost invariably been positive, so far as the elective localizing power of bacteria was concerned. Such investigations will be continued as circumstances permit, in order to obtain data with regard to the causal relationship between focal infection and systemic disease. Thus far patients with primary ulcer, recurring hemorrhage, secondary and anastomotic ulcer, achylia associated with low-grade pancreatitis and cholecystitis, have been investigated, with results apparently proving the causal relationship of parasite and disease, and the striking improvement in the health of the patient following thorough and proper removal of all foci.^{4, 5, 8}

ILLUSTRATIVE CASE

Case A346832. Mr. J. H. C. Posterior gastrojejunostomy for duodenal ulcer on the anterior wall, and appendectomy were performed June 21, 1921. The stomach was somewhat dilated; exploration of the gallbladder, ducts, liver and pancreas was negative. The patient was completely relieved for one and one-half years, when there was a recurrence of similar symptoms.

Definite foci in teeth and tonsils had been found at the first examination but the advice to have them removed had not been followed. Tenderness was noted in the epigastrium. Gastric analysis revealed total acidity 42 per cent, free hydrochloric acid 30, and filtrate 350 c.c. Roentgenograms revealed an ulcer on the lesser curvature, deformed cap, the "gastro-enterostomy not free", signifying probable early gastrojejunal ulcer.

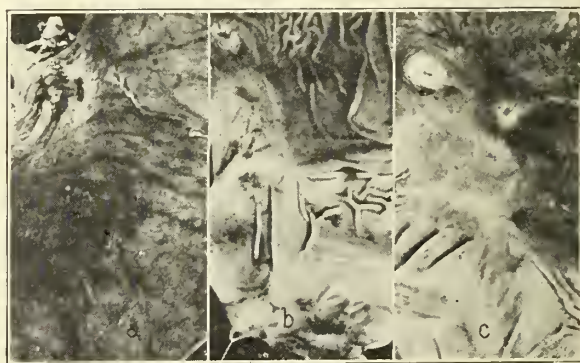


Fig. 1. **a** and **c**, ulcer of the stomach in rabbits following intravenous inoculation of the freshly isolated culture of the streptococcus from the tonsil in the case of recurring ulcer, and **b**, the corresponding filtrate. Note the marked necrotic margins of well-formed ulcers near the cardiac orifice following injection of the living culture and the hemorrhagic ulcer near the pylorus following injection of the filtrate.

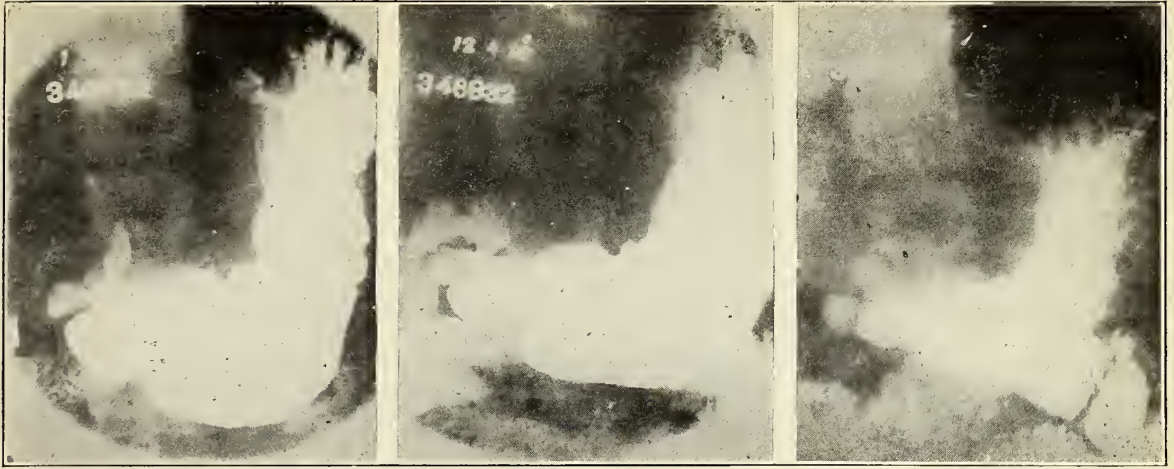


Fig. 2. (Case A346832.) January 20, 1922. The stomach before operation. Diagnosis: Duodenal ulcer. Characteristic deformity of duodenal cap.

December 4, 1922. Ulcer on lesser curvature, body of stomach. Cap deformed; gastro-enterostomy not free. January 11, 1923. Stomach negative. Gastro-enterostomy free. Reray July 9, 1923. Stomach negative, gastro-enterostomy free.

The tonsils, from which pus was freely expressed, and four pulpless teeth with well-marked areas of rarefaction around their apices, were removed at four sittings. Ulcer was produced in animals after the injection of minute doses of suspensions of pus expressed from the tonsils, and also after the injection of the primary culture, and a series of the secondary cultures. Identical results were obtained by Meisser and Nakamura following the injection into animals of cultures from the patient's teeth. In thirty-seven of forty-four animals (84 per cent) the results were positive, hemorrhage or ulcer of the stomach being found (Fig. 1). Coincidental with the removal of the foci of infection, and medical management of the ulcer, the patient's symptoms subsided and there was marked evidence of healing (Fig. 2). The patient has remained well since.

PREVENTIVE TREATMENT

Prevention is more effective than treatment for recurrent ulcers. In the patients in Group 1 the formation of secondary lesions seems to prove the influence of distant foci of infection. Those in Groups 2 and 3 demonstrate that the operative field, in a certain percentage of cases, is a point of least resistance which may be unfavorably influenced by irritant factors until healing is complete. The part focal infection plays in such cases is still a moot question and, I believe, demands further investigation. There is a third type of case in which there is a tendency toward recurrence, in

some instances repeated, over a short period. The Hebrew and the person with a hyperirritable nervous system who smokes excessively are illustrative of this type. Whether nervousness and tobacco are direct or only predisposing causes remains to be proved. Moynihan has recently called attention to the fact that smoking is one of the most harmful habits for ulcer-bearing patients; that an "attack" of duodenal ulcer often follows an orgy of tobacco, and that abstinence may check such an attack. I have noted repeatedly that patients, especially young adults, with distressing epigastric complaints simulating ulcer, are permanently relieved by eliminating tobacco. In this connection it has been observed occasionally that a drinking bout may predispose to recurring gastric hemorrhage years after the patient has been restored to health by an operation. Rosenow is convinced that an ulcer which remains is not in itself a source of future trouble, chiefly because the organisms present are invariably few in number.

From the foregoing, it is reasonable to conclude that the removal of all demonstrable and suspected foci, and the avoidance of all predisposing causes are essential for the prevention of recurrences and for the production of permanent cure in the greater number of cases. Among the chief predisposing causes are bulky, indigestible food, hastily and heartily eaten too soon after operation, fatigue, climatic exposure, respiratory infections, and the intemperate use of tobacco, alcohol and condiments.

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DISCUSSION

DR. ROBERT L. RIZER: We certainly all appreciated the paper of Dr. Eusterman. There are many points of intense interest. I think the first is from the standpoint of infection as being the chief etiological factor in the production of ulcers. I think it is the chief etiological factor in the cause of recurrent ulcers and explains why we have a recurrence in the disturbance. It has been definitely established from researches and the work of Dr. Rosenow and Dr. Eusterman in collaboration, that infection has produced ulcers in animals, where the recurrence has taken place. The removal of the infection foci has in our experience limited recurrence. The animal experiments have borne this out.

We do not see as many of the great deep crater ulcers since we have been removing foci of infection. Another point: Our experience with malignant degeneration occurring on gastric ulcer has been very limited. I would like to ask Dr. Eusterman if he would kindly let us know the frequency of developments of malignancy in cases that have been operated upon with gastrostomies or some other procedure. The routine removal of infectious foci, chiefly of tonsils and teeth, has almost ruled out recurrence in our experience.

The occurrence of coincident disease, particularly in the gallbladder, the appendix and the pancreas, in our experience occurred probably in between three and four per cent of cases. They are sometimes difficult to pick out on exam-

ination. Those, of course, will act as patent sources of infection and the ulcer symptoms are not relieved until surgical interference is used.

DR. GEORGE B. EUSTERMAN (closing): In answer to Doctor Rizer's question, I would say that we have known of specific instances in twenty-eight cases where gastric ulcers have apparently been transformed into carcinoma from two to seven years after a gastroenterostomy, when the ulcer was not removed at the original operation. Wilson reported nineteen of such cases almost ten years ago. Therefore, it seems reasonable to presume that in a small percentage of cases a gastric ulcer may undergo malignant changes even in the presence of a gastroenterostomy. We know that such ulcers may occasionally become reactivated and even go on to hour-glass deformity or some other complication in spite of a gastroenterostomy; hence the logic of excising such ulcers by knife or cautery at the original operation. Such malignant transformations were found to be situated at or near the site of the original lesions as determined by the roentgenogram or a secondary operation in the cases that again came under our direct observation.

As regards the question raised by Doctor Strickler, undoubtedly infectious conditions in the intestines, because of foci in the upper respiratory tract, probably do obtain. Our knowledge and accumulative data regarding this possibility to date are not very complete. Rehfuß, in a personal communication, described cases of infectious colitis following suppurative sinusitis and other conditions in which he was able to obtain the same variety of streptococcus from the mucous discharges and intestinal lesions which were present in the sinuses; that by cleaning up the original focus of infection and treatment of the bowel condition, patients were cured. Undoubtedly the bulk of intestinal infections, as Adami has pointed out, originate in the intestinal tract itself. Experimentally we have reproduced acute hemorrhagic gastroenteritis by injections of organisms from periapical abscesses, which experiment seemed to explain the clinical history, as such patients frequently gave an early history, with symptoms of acute gastroenteritis, mild or severe in form, gradually being transformed into a chronic condition associated with achylia, which was probably due to loss of glandular function, the result of the former acute process. Frequently there is an associated cholecystitis and pancreatitis in such cases.

ASSOCIATION AND FAIR PLAY*

JAMES D. DENEGRÉ

Minnesota State Senator

St. Paul

One of the outstanding tendencies in the complexity of American life of today is association and organization. It is the outcome of national growth and of a multiplicity of religious, industrial, vocational, fraternal and social endeavors.

The grouping of men and of women, too, together

*Address before the Minnesota State Medical Association meeting, St. Paul, October, 1923.

in co-operation and their organized activities constitute a tremendous factor in the development of our institutions and the formation of public sentiment.

The growth of these organized groupings is typical of the American genius—service by association and progress through association. For centuries we have had organized community government in constantly changing forms, and we have had organized morals in the form of the church, but it is only in these later days of great industrial and material growth that there has arisen great organizations of sections of our people with a common understanding and a common purpose. Organized labor, organized business and organized agriculture are recognized forces now in the community along with organized government and organized morals.

It is the group that exerts the larger influence and power in the formation of public opinion; the individual is making himself felt by and through the group with which he is cooperating.

The medical profession is one of the oldest and most honorable of these groupings of men together with a common object and common purpose.

Collectively and individually it has exercised much power and influence and it is still capable of doing so. But I am inclined to agree with Dr. Savage that in the past few decades it has not made the most of these opportunities and in saying this I am not at all unmindful of the marvelous advancement of medical and surgical science and of the wonderful work accomplished by medical men for the alleviation of human pain and suffering and the upbuilding of a stronger and better race. But the trouble is, the public is not informed, is not cognizant of what you have accomplished and are accomplishing and has not been told about it. You have, I think, in the strenuous and exacting demands of your profession, been keeping too much within yourselves.

Let me illustrate this by something concrete. Last winter you appeared before the legislature with a measure known as the Basic Medical Practice Act. Personally I believe that it was a measure which if passed would have made for higher standards in the various schools and agencies for the treatment of human ills. But there was a feeling among the legislators and many of the public that you were trying to shut out the newer cults recog-

nized by law; that you were striking a blow at the under-dog and that you were not playing the game fair. With this sentiment arrayed against you the measure did not pass.

The opposition to the Basic Medical Practice Act was, I think, intensified by the fact that you had been before the legislature on previous occasions seeking or opposing legislation bearing on your profession and of more or less public interest and while your motives were undoubtedly of the very highest, your efforts were interpreted by the rank and file as self-seeking and for the advancement of your own profession. There was a suspicion that you are an autocratic, high-toned, close corporation and that you were generally before us only when you were interested in something of benefit to yourselves and that somehow or other you didn't care much for the little fellow.

I realize full well that this sentiment is not fair and does not do you justice; but it is an existing condition and I think that your friends in the legislature and your own legislative committee will concur with me that I have not overstated it.

While I may not be qualified to suggest a remedy I think that present conditions can be met and in part offset by your profession taking a more active interest collectively and individually in the things outside of your vocational work, in some of the social and political movements, too, that make for a better citizenship and the permanency of our democratic institutions.

I am fearful that many of you and those of other professions including my own have difficulty in finding time to vote. A few years ago after a rather important election, I had to make, on account of a prospective contest, a cursory analysis of the vote in one of the populous residence districts of this city and I could not help but note the absence from the poll list of many men prominent in the professional life of the community. I do not say that this is generally true of members of your profession and that you do not vote, but the point to which I desire to give emphasis is that particularly in our large communities men of education, prominence and standing in both the business and professional world still look down upon politics as something beneath them—unsanitary and unclean, and register and vote only when urged and solicited to do so by some party organization or the friends of a candidate for office.

I believe you want to play the game fair—but the public does not appreciate it. Yours, while a small, is a well-informed and well-educated group and exercises a wide influence and I think that a more active participation in the duties of good citizenship and a wider publicity of what you have done and are doing will go a long way in arraying public sentiment on your side.

One of the compelling issues before the American public today is the issue of State Socialism against Individualism. It is a larger issue than many informed on public affairs will admit. The attention of the public is being drawn to it by the existing discontent in parts of the country, more particularly the agricultural sections of the middle west, although I think that that discontent is somewhat exaggerated by well organized propaganda. As in nearly every case where something goes wrong, the government is being appealed to and men are asking for legislation to amend the economic laws of supply and demand and to fix the price of some of the staple products of the farm.

Many of those who are voicing the present discontent are striving to bring about the operation of public services and even quasi-public services by the state; they are asking for more power for our law-making bodies and less for the courts and are seeking to impose upon us some of the socialistic theories which are proving so disastrous in Europe today.

In the existing discontent and in the demands for legislation to cure our economic ills I think we are losing sight of the true American philosophy which in a phrase may be termed the philosophy of fair play, and which holds the prime function of constituted authority to be that of preserving fair play and equal opportunity for every individual.

This philosophy in providing the field of opportunity and security of reward stimulates the individual to create his own place in the social structure by his character, ability and efforts.

The foundations of this republic were laid by men of courage and ambition rebelling under a social and political autocracy which suppressed the freedom of opportunity known as fair play.

The note which rang true in the Federal Constitutional Convention and in the state conventions was the note of equal rights and opportunities, the note of fair play.

It was not fair play when men lucky in birth and fortune made the selection of administrative offi-

cers and the laws under which all must live. Universal suffrage came as a response in our earlier days to the aspirations of fair play.

It is not fair play that organizations of men associated for lawful activities shall stand unequal before the law with exemptions for organizations of labor or organizations of growers. I believe the time will come when these inequalities will be removed because they violate the human sense of fair play.

It is not fair play that organizations of men shall deny the right to work, to men of other views. It is equally clear that public opinion condemns organizations that by force and violence offend the public sense of fair play.

It is not fair play that through unequal or unwise taxation, special sections of our people, numerically strong, shall levy an unfair burden in a spirit of envy and resentment against those other groups more fortunate than themselves. Taxation which destroys the human incentive in the fields of scientific research and discovery and which stifles the willingness to take the risk of new trade and business ventures is unwise as well as a violation of fundamental fair play.

Under conditions of absolute fair play between individuals and organizations, society apportions a sure and fair reward to those who serve best whether in the field of invention, discovery and research or the work of industry and the professions.

It was on the principle of fair play that our government was founded; it was on the same principle that it has developed, prospered and grown and in my judgment it will be by an adherence to that principle rather than to any legislative nostrums that we will find our way out of our present and future troubles.

The thought that I would leave with you is the duty of men of your high intelligence, influence and standing making a stronger impression upon the thought and public sentiment of the day. There are great organizations striving to mold public sentiment which are at work not just before elections but all the time between elections and if the principle of fair play is to be preserved in our government and its institutions, it must be with the coöperation of men of your type and understanding.

The maintenance of this principle is an important concern of yours and mine.

HAS THE MEDICAL PROFESSION LOST THE POSITION IT ONCE HELD IN THE ESTEEM OF THE PUBLIC?*

FRANCIS J. SAVAGE, M.D.

St. Paul

Whether or not the title of this paper be an accurate statement may be argued. During the past session of the legislature, one of our older practitioners, who was active in legislative matters thirty years ago, asked me if I were sufficiently familiar with the legislators to realize that the medical profession did not stand well with them. I had already arrived at the same conclusion, and it would seem as if we must go further back than thirty years to prove our point. However, I think we will all admit that the old-fashioned country doctor who ranked with the minister, the lawyer, and the banker, as a man of education in his community, who was the family counsellor and friend, did hold a position in the public esteem that modern city life almost prohibits.

I think of one of this old school who practiced in a Massachusetts village. He was the first president of the first village improvement association in America. He held the position of president for twenty years. He died in the early eighties, but his memory is perpetuated by a carved rock near one of the paths in the park given to the village by the association: "Dr. ———, born 1804, died 1882. 'The Beloved Physician.'" I have referred to this old-fashioned country doctor as a type of the old school, one who, although he lacked laboratory facilities and the benefit of expert opinion from his specialist friends and had to depend on his own common sense and judgment, did hold a position in the public esteem and had a close personal touch with his families which does not prevail in these days of specialism and clinics. This old family doctor did not know the meaning of commercialism. He sent his bills out once a year and in the summer his wife took boarders to help pay their bills.

Commercialism, fortunately, does not characterize the medical profession; but there are enough examples apparent to everybody to deserve some comment. Some years ago I watched an acquaint-

tance removing a simple, small adolescent colloid goiter from a girl of twenty. I asked him what he was operating for, and he said, "For a hundred dollars." In his case a true answer. Many years ago I did a charity appendectomy on a woman who earned her living by working by the day. She was in the hospital sixteen days and her bill was \$16.00. She had but \$15.00 and the hospital authorities took her wedding ring as security for the remaining dollar. A domestic earning \$18.00 per month in the family of a close friend of mine was charged \$350 for a mastoid. The account was settled for \$100 of borrowed money. The public does not always recall the amount of time and energy given free by medical men in hospital, dispensary and private work; but the few glaring examples of commercialism such as the above stand out in their memory with such prominence as practically to exclude the other phase. If the welfare of the patient were put first, there would be no complaints along this line.

Is commercialism back of the growth of the cults, or is it due in some degree to the failure of the medical profession? There are approximately 2,200 medical men in Minnesota, and 500 osteopaths and chiropractors—to say nothing of Christian Scientists. These men earn their living through people who believe in them. It sometimes seems in the legislature as if 77 per cent of the legislators were patients of these practitioners rather than 23 per cent. At the recent session of the legislature, the House Committee on Public Health and Hospitals recommended two chiropractic bills which were diametrically opposed to each other in principle. The first provided that the future chiropractor must prepare himself by studying for 4,100 thirty-minute hours (equivalent to 2,460 fifty-minute hours), a course easily completed in one year. The second bill called for four years of nine months each. In other words the legislature wanted to do anything that any chiropractor might ask. The medical profession had a far different reception. When the Basic Medical Practice Act was discussed on the floor of the house three members told what wonderful things the chiropractors had done for them; not a soul had anything of a similar nature to say of the doctor!

In conversation last winter with a prominent chiropractor I asked him if they depended on the x-ray for the demonstration of dislocated vertebrae.

*Presented before the Minnesota State Medical Association meeting, St. Paul, October, 1923.

He said, no—that the *x-ray* would show them, but that his fingers were so sensitive that he didn't use or need the *x-ray* evidence. He evidently is able to have his patients dream the same dream.

The osteopath puts in about 4,500 hours of work in preparation as against 10,400 by the graduate in medicine of the University of Minnesota; and yet he is today in Minnesota licensed to administer anesthetics, narcotics and antidotes, in the practice of obstetrics and minor surgery and cases of poisoning. He is not entitled to practice internal medicine or major surgery.

Among the other phases of the analysis of this subject the matter of expert medical testimony deserves consideration. Who is there among us who has not blushed for his profession in listening to so-called expert medical testimony? A physician told me with pride of a case in court when he was to testify on behalf of the plaintiff. The papers had been drawn alleging an injury to the nerves of the leg. When the case was called for trial, this doctor found himself opposed by one of the leading neurologists of the state. He then instructed the attorney for the plaintiff to change the pleadings to show the case to be one of injury to the ligaments. The neurologist was left high and dry; and the proceedings being held many miles in the country and no surgeon being available, the doctor won the plaintiff's case. It is unnecessary to burden you with additional examples. Hennepin County made an effort to correct the disrepute that has fallen upon the medical profession on account of expert medical testimony. The proposal was that each member of the Hennepin County Medical Society who might wish to testify in court should sign a card indicating in what subject he considered himself qualified to act as expert witness. By mutual agreement of opposing counsels three physicians were to be selected who had qualified in the specialty under which the case would fall. This medical jury of three, paid jointly by opposing sides, was to bring in the medical verdict. I understand the procedure has not been popular with the lawyers of Hennepin County. In discussing this with a lawyer, he said he thought the procedure never would be popular with the legal profession because it deprived the lawyer of his prerogative of bringing out all available testimony on cross-examination.

The following paragraph was written by Dr. S.

Marx White and is taken from the report of your Committee on Public Policy and Legislation: "Only by a mechanism which will remove the temptation to modify testimony for gain, and make the expert an officer or employee of the court, instead of the litigants, will it be possible, in the opinion of your committee to do away with the many and serious evils of present day medical testimony."

Along the same lines of lack of common honesty come the unjustified medical certificate to avoid jury duty and the whiskey prescription.

A far more serious offense than the lack of common honesty is murder done by the habitual abortionist. This was the subject of discussion by the Committee on Public Health and Hospitals while in executive session in debate on the late lamented Basic Medical Practice Act. It was one of the arguments used in killing our bill. It is not supposed to be, nor is it, the business of the doctor to ferret out the criminal abortionist; it is the business of the county attorneys and the police. But when such statements are made at the state capitol casting a slur on the whole profession, is it not time for us as a society to go a step beyond what we are supposed to do, and in the endeavor to square ourselves in public opinion appropriate a sum of several thousand dollars for the employment of women detectives for obtaining evidence against the criminal abortionists? Would not the knowledge of the existence of such a fund have a deterring influence, and in addition demonstrate to the public that we are doing what we can to wipe out these vipers?

Another phase of our subject is the lack of interest shown by medical men in public affairs and politics. In how many of our communities do you find medical men the leaders in public and civic affairs? St. Paul has the fairly good record of having about thirty doctors as members of the St. Paul Association. This association is back of all new matters in the city that have to do with civic development. As its total membership is 3,600 and there are 419 physicians in the city, 7 per cent of the medical men are members of this civic association. Last winter at a dinner attended by 1,100 people at which the closed shop as a national menace was discussed, there was one doctor present. Medical men have the brains and ability to take their place in the civic life of the community; what is lacking is the inclination. When I discussed

the subject of this paper with one of our state senators he gave it as his opinion that the loss of prestige by the doctor was directly due to his lack of interest in politics. He said that the busy doctor was no busier than the busy lawyer, and yet the doctor was apathetic and the lawyer was active in politics.

In the old days the ministry, law, and medicine had more of a monopoly on higher education than is true today and consequently were held in greater respect.

There are many other phases that might be brought out in the analysis of the subject, but the fact that medical men do not hold the position they should in the estimation of the public has been brought home to me by three years' work on the legislative committee of the State Association.

Admitting the truth of the statement that the doctor has lost standing because of lack of leadership, what are the remedies? Some of the remedies have already been indicated, namely, honesty in court, considering the welfare of the patient of more importance than his fee, wiping out the habitual abortionist, and taking a keener interest in public and civic affairs.

There are two other suggestions I wish to make. The first is a campaign of public education by the entire medical profession of the country emanating from the American Medical Association—through the public press, radio, and moving pictures. The job is too big for any one state.

There is no one agency equal to the public press for the dissemination of facts showing what the medical profession has done in the eradication of epidemics and the control of disease and sanitation. Why should not the American Medical Association employ a staff of writers and arrange for well-written newspaper articles to be broadcasted over the country through the Sunday papers? There are of course difficulties in the way: those who pay the newspaper for advertising Lydia E. Pinkham's Vegetable Compound would undoubtedly withdraw their patronage if they advertised on one page and on the following page were confronted with the formula of this vegetable compound and an article by the editorial newspaper staff of the American Medical Association. The public is entitled to know the facts, and it is up to the medical profession to give them the facts. It is at least worth a mighty effort in the endeavor to get an enlightened

public opinion. The medical men of the state of Illinois have raised a sum of \$10,000 this year for public educational propaganda. They propose to work through the newspapers, by radio and the lecture platform.

Next in importance to the public press for reaching large numbers of people may be ranked the movies. Imagine short films in all the larger theaters of the country showing the conquest of yellow fever, of typhoid, of diphtheria, and many others. This could be done by the American Medical Association, and if it were started, together with propaganda by radio and through the press, it should be on at least a ten-year basis.

The second remedy I wish to urge, particularly here in our own state, is that medical men as an organization take an active interest in politics. I wish to cite an instance showing their relative importance at the last election for the legislature in Ramsey County. In the Merriam Park district there were two chief candidates running for the house. The one up for reelection had shown himself antagonistic to the medical profession at the last session of the legislature; his opponent had expressed friendliness toward the medical profession. The committee on legislation of the Ramsey County Medical Society called up fifty voters by telephone and got their pledges to support the second candidate. He won by approximately fifty votes. This man introduced our Basic Practice Act in the house and fought for it to the last ditch. He also fought the osteopathic bill.

There are certain members of both senate and house who by years of voting have demonstrated that they are hostile to regular medicine and will do anything in their power for any quack. These men are often elected by a narrow margin. Why should we not throw a united opposition against these men at election? It is possible to elect men friendly to us; it has been done and should be done at the next election all over the state. I can assure you we need such backers at the capitol. Last year for the first time there were organized committees on legislation in all the principal county medical societies. These committees should continue to function and become more active each year. I can see no objection to their becoming active political factors.

In conclusion, I wish to offer one more suggestion. As the boy is father to the man, so is the

relationship of the medical student to the physician. Do our medical schools, in addition to passing on the mental qualifications of the future physicians, pay enough attention to character? It seems to me this is one of the fundamentals to the future welfare of the practice of medicine.

DISCUSSION

DR. O. C. STRICKLER: I think this paper of Dr. Savage is particularly timely. I think this subject should have been discussed earlier in the day, that is, at the time that we have been discussing questions connected with the relations between the public and the profession. Yesterday I received a communication from a colleague in a neighboring town, stating that he was being sued for malpractice in the case of a fractured arm and asking what he should do. He has insurance. I wrote back and gave him my suggestions, as I had seen the case. I feel that the trouble with the introduction of malpractice suits is due very much to the medical profession itself. In French they say, in detective work: "Hunt the woman." In every case of malpractice that is introduced in this state, as far as I know, the proposition is: "Hunt the doctor." Some doctor is back of every malpractice suit. I am particularly interested in this subject because when malpractice suits are tried we hear medical men and surgeons testify as to the case under question. It is no doubt on account of this that the public has lost to a great extent its appreciation of doctors; that if it is a factor it is on account of the stand that members of the medical profession take in such matters.

Along with a discussion of the paper of Dr. Savage we should also discuss the suggestions made in Dr. Judd's paper. We should endeavor at all times to encourage our medical men to unite with our medical societies, and we should do everything we can to promote harmony. I doubt very much the propriety of the action taken a few years ago when our charter in Brown and Redwood County was revoked on account of some personal opinions held by one of our members. I do not think we will get anywhere with any such action. If it can be shown that a medical man or surgeon is doing anything to encourage malpractice suits or doing anything considered unprofessional he should be spoken with in a kindly way and have the matter rectified.

Personal opinions as to politics or religion should not be discussed in the meetings of our medical societies, they have no proper function there. I am saying this intentionally, kindly and sympathetically, because there are three or four former members in our county that have not reunited with our society. I go to them and speak with them and they bring up personal matters and remain outside of our society. The unfortunate thing is that if we have any bill before the legislature and we ask those gentlemen to assist us in the passage of the bill, either they do not assist us or they work against us.

I received a number of requests from our Legislative Committee stating that I should do what I could with our representatives and senators regarding a certain bill. I

went to them. They asked me: "Does this bill receive the support of the medical profession?" I said: "Yes." "Does it receive the support of the State Medical Association?" I said: "Certainly." One of the gentlemen said: "Then I will do everything I can against it," and he gave as his reason some action taken by this Association in regard to one of our members. I told him that was not the stand to take, that every question ought to stand on its own merits.

If we work together and get in those six hundred or a thousand men that are not members of our Association and talk over matters fairly and kindly I believe we could pass a reasonable law. The older members of this Association will no doubt remember H. A. Tomlinson's suggestion that all medical practitioners in the state should come under one law and that the examination of the State Board should omit therapeutics. That will allow the homeopath, the osteopath, the eclectic, or anybody else that wishes to practice sectarian medicine to pass some examination in it, but they would not be required to pass an examination in therapeutics. The more I think of it the more I think that would be a very excellent law, and I hope that all of us will do everything we can to encourage men to come in, no matter what their ideas are regarding private matters.

I am reminded a few years ago, Mr. Noyes, of Noyes Brothers & Cutler, was appointed on the Board of the Presbyterian Synod or Conference that had to do with the rewriting of the creed. Judge Thomas Wilson, formerly of Winona, met him on the street, and Noyes said to him: "Judge, you know I am going to New York to assist in rewriting the creed; have you any suggestions?" Judge Wilson replied: "Brother, save as many as you can."

THE PRESIDENT: Probably the most important medical association in the world is the American Medical Association. This may be largely due to the efforts of the profession as a whole but I think it is particularly due to the activity of the officers of that body. Dr. Olin West is here and I will ask him to take part in the discussion.

DR. OLIN WEST, Chicago: I count it a very great privilege to be permitted to attend this meeting of the Minnesota State Medical Association, at the invitation of your President and Secretary, as a representative of the headquarters organization of the American Medical Association, from which I bring you assurances of very willing service. I can also assure you of the existence of a very earnest desire on the part of the officers of our national organization to co-operate with the officers and members of this state association for the advancement of the cause of organized medicine in Minnesota and in our whole country. Among the officers of the American Medical Association are two distinguished members of the Minnesota State Medical Association—your honored president, Dr. Judd, and Dr. Thomas McDavitt, of St. Paul. Dr. Judd, as a member of the Council on Scientific Assembly, and Dr. McDavitt, as a member of the Board of Trustees, have served faithfully and well and, in their service, have splendidly represented their state society. I should like to say, also, that, in the conferences and meetings in which it has been my pleasure to be associated with him, your secretary, Dr. Drake, has carried the Minnesota banner with great credit and has made distinct contribution toward the furtherance of the

plans that have been made for perfecting and extending the work of medical organization.

It has been a great pleasure to hear the informative address delivered by President Judd, and the live paper of Dr. Savage, which I feel sure will stimulate thought and lead to the formation of needed convictions and, finally, to a crystallization of opinion that will bring about such corrections as may be necessary and can be made through the established agencies of medical organization.

I am one of those who do not believe that the real medical profession has lost in the esteem of the public, nor that it is without influence with the public. On the other hand, I believe that the true physician and the real profession which he represents stand higher in public esteem than ever before and exercise a greater and more helpful influence than ever before. The work and the benefits and the influence of scientific medicine have been carried to the ends of the earth and in every land into which the light of civilization has penetrated the beneficent ministrations of physicians are being received and are gaining for the profession an esteem and confidence and influence greater than have ever before been enjoyed. Within the recent past I have had the privilege of exchanging greetings with a physician who does his work in far off Tibet, another who labors under a burning sun in tropical India, another from the remote recesses of interior Africa, and still another whose sphere of work is within the circle of the effulgent rays of the midnight sun. As I go about in our own country, I see great hospitals filled with those who believe and trust in the medical profession and turn to its members for aid when in distress by reason of disease, and I see other hospitals being erected by public subscription in order that the people may have the benefits of medical service under the best possible conditions. I see record breaking attendances at our society meetings and note what seems to me to be an air of unusual prosperity about those present. When I have opportunity to call on my medical friends at their offices, very frequently I find all chairs taken by patients who have to wait so long that one cannot doubt their entire confidence in the doctor for whom they wait, if not in scientific medicine in its entirety. The inquiries that pour over my own desk teach me that the people believe in the medical profession and in its ability to interpret and apply the facts and methods that scientific medicine has developed.

If Dr. Savage will draw his strictures within somewhat closer lines and make his observations to apply in somewhat more narrow latitude I will be able to agree with him in most particulars. There are certain things about which we need to ponder and we *do* need to look ourselves as a profession squarely in the face and to heed some of the signs of the times. There are tendencies that need to be checked; there are, perhaps, some incumbrances which might be removed by an assumption of leadership which the profession has been slow to assume, though it seems to rightfully belong to it. It is undoubtedly true that individual members of the medical profession, some of whom are within the pale of medical organization, are guilty of reprehensible practices and that their transgressions bring reproach on the whole profession. Here is a job for medical organization to do, here is a reason for striving to perfect

organization and for stimulating the zeal and efficiency of our component societies. In some spots our boards of censors and our councilors need to get busy. The membership of the American Medical Association, which is the combined membership of all of our state associations, was more than 90,000 on October 1. This peak will not be maintained, because many become indifferent or careless about maintaining membership and neglect to attend to the payment of dues until rather late in the year. We need some of those who are out, in; we also need to have some of those—a few—that are in, out. The men who will not live up to the ideals of organized medicine, the men who violate the principles to which organized medicine holds, the men who will not subscribe to nor support the ethics of the profession and who will not live up to its traditions are not those about whom the protecting arm of our organization should be thrown nor to whom our recognition as an organized profession should be extended.

Dr. Savage has offered some fine suggestions as to what can be done along certain lines and I am glad that I can tell you that the American Medical Association is doing some of the very things he suggests. Some of these activities have been lately undertaken, some others are fairly well established. *Hygeia*, a journal of individual and community health, represents an effort upon the part of the Association to give to the public dependable information about the aims, purposes, possibilities, and even the limitations of scientific medicine. There is, it seems, some difference of opinion in the profession as to the wisdom of publishing such a journal. And, by the way, right there we encounter a difficulty which points out our need for more active, more earnest and more efficient medical societies, especially in our counties. It is extremely difficult, sometimes, even for those on the watch towers, to determine just where the weight of opinion lies. Better working societies would effect the crystallization of opinion so that surer guidance might be had. *Hygeia* now has a circulation in excess of 20,000. Some medical societies have subscribed for enough copies of the magazine to distribute it among all teachers, preachers and public officials within their respective territories. "Clip sheets" carrying abstracts of articles appearing in *Hygeia* are being sent to newspapers and other lay publications and are, to some extent, being used by them.

The Bureau of Health and Public Instruction will, when the necessary organization can be perfected, prepare articles for the use of county or district societies to be published in newspapers. The matter of the preparation of articles to be distributed among newspapers all over the country is now being considered. Already a member of the editorial staff has written some articles of timely interest which have been distributed widely by a newspaper syndicate, which no doubt many of you have seen in print.

The Bureau of Health and Public Instruction has also begun an effort to utilize the radio to good advantage. A representative of that Bureau has been on the program of Station KYW in Chicago several times and plans are being considered for extending this kind of service to other radio stations in a number of cities.

The Bureau of Legal Medicine and Legislation, under the immediate direction of Dr. W. C. Woodward, is working

might and main for protection of professional interests and for the public welfare. This Bureau is devoting itself to the study of legislation in which the medical profession is interested, whether for its enactment or defeat, and is lending all possible aid to the legislative committees of state medical associations. It is difficult to make the public or the members of legislatures understand that legislation proposed by our medical organizations is designed for the benefit of the people. I would not like to have public esteem for the medical profession measured by the response that we get in some state legislatures when we appeal to them for the enactment of laws which we sincerely believe will redound to the public good. Incidentally, if I may be permitted to give expression to a personal opinion, it appears to me that some of our committees offer too many bills. There is no virtue in superabundant legislation. The Bureau of Legal Medicine and Legislation has done some very effective work with government bureaus in Washington and is still struggling with them in an effort to secure relief from multitudinous rules and regulations that are confusing, if not oppressive.

I have trespassed too long on your time and patience, though I would like to try to tell you of more of the work that is being undertaken by the American Medical Association. There is nothing that can take the place of scientific medicine. The profession has but to deliver adequate service to those who are in need, whether they be rich or poor, great or small. It is the job of medical organization to help its members to deliver such service and there is much that our societies can do to that end if they will seize on the opportunities that offer.

DR. J. T. CHRISTISON: I had the privilege of reading Dr. Savage's paper one day last week and incidentally discussed the matter at considerable length with him. Doubtless much of what he says is true, but I take a more optimistic view of the subject. I do not believe that the medical profession has so far lost the esteem of the public that we need worry so very much about it. It is true that we have ourselves largely to blame for many of these things. We try in our way to educate, through propaganda and publications of one sort and another, and yet, when we try to present matters pertaining to public health to our legislative bodies, we are met with the most unkindly reception. We are led to believe that the legislature feels that we are doing these things from a purely selfish motive, that we want to put the other fellow on the shelf and have everything for ourselves.

Take for instance the propaganda against the spread of tuberculosis. I am connected with an organization in St. Paul which has been carrying on that sort of work for a number of years. Try to get something into the newspaper that is receiving money from patent medicine advertising and you will find that that is about the most difficult job you ever tried to do. The public, as a whole, perhaps are not particularly interested in this phase of the subject, and the strangest part of it all is that it is not the ordinary individual, it is the educated individual who is ever ready to take up any new fad no matter how chimerical it may be. Possibly this is just human nature, reaching out for the unattainable. The alluring advertisements in the newspapers lead people suffering from chronic ailments to grasp, as it were, at a straw. We all know perfectly well that a large percentage of human ills get well after a while anyway, and the charlatan and the irregular practitioner to whom these people go get the credit for curing them.

Dr. Savage referred to the medical practice act that we tried to introduce at the last legislature. One of the most curious things, as far as the attitude of the lawmakers was concerned, was that dotted all over the house were men who were perfectly ready and willing to tell of the wondrous things that the chiropractor or the osteopath or some other "path" had done for them and not one friendly voice raised in defense of the medical profession. I am firmly of the belief that we ought to have organization. Let us constitute ourselves, each one individually, into such committee and apply the golden rule to the practice of medicine, put our patients first, last and all the time in the foreground and give them the very best that is in us. Do the work that comes to us as well as we can do it and let time and education take care of the rest.

DR. F. J. SAVAGE (closing): I am not a pessimist on this subject, I feel decidedly optimistic. I think, however, that we do not get anywhere by taking the attitude of the ostrich in putting our heads in the sand or patting ourselves on the back and say there is nothing beyond, that there is no chance for more because we have reached the goal. The way I became interested in the subject was through our work with the legislature. I am perfectly willing, if the Editing and Publishing Committee wishes to take the suggestion of Dr. S. Marx White and eliminate the word "Why" in the title and make it read as though it were a question rather than a definite statement: "Has the Medical Profession lost the Position it Once held in the Esteem of the Public?"

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EDITORIAL

Publicity

The opinion is occasionally expressed by members of our profession that it is not at all incumbent on us to carry on publicity work through our county, state or national medical organizations. They admit that we, as physicians, should be ready to give advice on health matters affecting the public at large when it is requested.

The public health movement of today constitutes more than a request—a demand, not only for information but for active measures in health matters. What are we going to do about it?

As far as the medical profession is concerned, publicity and education in matters pertaining to health go hand in hand. The public is little interested in our organizations; they are interested in facts pertaining to their individual health.

Each county society should have a publicity committee or committee on public health. It

should be the function of such a committee to maintain a list of physicians available for publicity work in connection with cancer week, child health days, and the like. The listed physicians can then be called upon to address local civic organizations requesting such services.

The newspaper is the very best vehicle for publicity. The daily columns written by Drs. Brady, Evans, and more recently by a former president of our national association, Dr. Charles A. L. Reed of Cincinnati, have done more towards directing the public to right ways of thinking on medical subjects than the combined activity of the organized medical profession. These men should be encouraged in their good work.

As a means of publicity, the radio is undoubtedly a close second. We are informed that last year the Westinghouse Company alone sold two million receiving sets throughout the country. One large sending station estimates it reaches anywhere from 100,000 to 500,000 individuals at a time. The so-called medical cults are utilizing this means for advertising purposes and show some sagacity by employing real artists, interspersing the numbers with a word about the advantages of their particular method of treating human ills. There is every reason in the world why the organized medical profession should employ the radio for directing the public aright. We say organized advisedly, for as the situation is today physicians outside the pale of the county societies are using the radio for private advertising.

The Hennepin County society has recently taken the stand that no members may speak over the radio unless anonymously. The radio refuses anonymous speakers, insisting that the public, out of courtesy, is entitled to know who is addressing them. The radio company has no objection to announcing that the Hennepin County Medical Society is sending a representative to make an address on a certain subject, the speaker being Dr. ———. They call attention to the fact that it is not so important to the public that the speaker is a physician as that he is representing a certain society. Recently the Publicity Committee of the Ramsey County Medical Society appointed one of its members, a surgeon in private practice, to give an address over the Twin City radio. The address was passed on first by the committee. This is an important point. If physicians in private practice are to make addresses over the radio, it must be

done on authorization by a county society committee and the address must be read and approved by the committee. Recently an address on Insulin was made in Chicago by an A. M. A. representative. In the next twenty-four hours he received thirty-one requests for his services in consultation and was forced to explain he was not in private practice.

This matter is still in the hands of each county society for individual society action. Radio publicity work by physicians in private practice may be easily abused. It is probable that much difficulty will be avoided by limiting radio addresses to full time medical men such as members of the University Medical School faculty, State Board of Health, Minnesota Public Health Association and the like. The American Medical Association is sending clippings from *Hygeia* to various parts of the country for radio transmission—a very admirable activity.

After all is said and done, the very best means of reaching the public is through the 150,000 physicians in the country. Correct medical advice rendered the people by this army of physicians should suffice in itself. The ideas communicated to patients will be further transmitted by them. Knocking the other fellow does the knocker the most harm and the same applies to our treatment of the cults. This does not mean, however, that we should not take a firm stand and express our honest opinion of spinal manipulation for all ills and the limit of the power of mind over matter.

It is the prime function of organized medicine to make better physicians of its members so that we can render better service to our patients. If we do this, we as a profession have nothing to fear from the ephemeral cults which always have existed and always will exist in one form or another.

This point should not be lost sight of, however, that even if we as a profession do not suffer, the public does. We have a certain duty to perform to present to the public the facts, and they can use their judgment in seeking medical advice.

Medical Defense

The Minnesota State Medical Association has provided legal defense to its members for a number of years. This provision cares for attorneys' and witness' fees but does not provide for the pay-

ment of judgments. For this reason a large percentage of the Association membership carries additional professional insurance in private companies.

While a member is entitled to legal defense, the provision in the By-Laws of the Constitution imposes certain restrictions. One such provision is to the effect that the Association attorneys must be given "sole power to conduct the defense." This provision for the sake of expediency has not been strictly adhered to.

The legal expense of the Association having increased so materially the past two years, the matter was discussed by the officers of the Association at this year's meeting and it was decided to call the attention of the members to this provision in the Constitution, which will be strictly adhered to in the future.

A member carrying insurance privately as well as through his Association membership is entitled to legal defense from either agency—but not to both. The above mentioned provision clearly indicates this point. Members in need of legal services will save time and avoid misunderstanding and confusion if they will bear this point in mind.

Dr. Warren A. Dennis

When a man dies he leaves behind his worldly possessions, and an intangible heritage sometimes infinitely more valuable. This is especially true of members of our profession. When Dr. Warren A. Dennis passed to the other side he left behind the memory of a life of helpfulness to his fellow man, and of a character, the nobility of which has left a profound impression on all who knew him. His was a most successful life, measured by the true standard of success. If to be of sterling integrity, true to the ideals of his profession, alert to the needs of the suffering, in the forefront of scientific attainment, strong in his conception of right and duty, vigorous in his denunciation of sham and pretense, qualify one for respect and honor, these he possessed in marked degree.

From early boyhood he carved his own way, ever holding fast to the principles of right living and to the demands of honorable life. In his profession he attained a high place. Among his patients he won warm friends and admirers. In civic life he did valiant duty. With exalted patriotism he offered himself freely to his Country

in two conflicts, serving with marked distinction wherever duty called him. He was a man of broad interests. His mind was logical, his perceptions keen, and his emotions responsive to the great questions which concern humanity. He was interested in all those social and economic problems which tend to make better men and better citizens, and his influence among his friends and acquaintances was always directed for their betterment.

But above all we loved him best as a friend. Loyal and dependable, we always knew that we could reach out to him for sympathetic understanding, for generous helpfulness, for sound counsel and warm response. Optimistic, cheerful and buoyant, he seemed to make those about him share in these genial qualities. He will be much missed and long remembered by his many friends.

MISCELLANEOUS

Post Graduate Work in Europe

To those who are contemplating post graduate study abroad, a few words regarding opportunities there, gained from recent experiences, might be of interest. The writer spent a month in London a year ago and found some excellent work in cardiology at the National Hospital for Heart Disease and at University College Hospital under Sir Thomas Lewis, and in neurology at the National Hospital for Paralysis and Epilepsy with world famous men on the staff. However, the clinics are widely scattered; it is hard to work out any sort of a full day's program with the type of work wanted, if one is exacting.

In Berlin, the men studying there seemed satisfied. There were about twenty-five on the ground, maintaining a loose organization, the American Medical Association of Berlin, but the men were scattered about in various clinics doing individual work. Some of the clinics were free, such as the winter term course of lectures by Krause, and it was possible to fill in the morning with such courses, leaving the afternoon free for private tutoring, costing about two dollars an hour from a professor and one dollar an hour from men of lesser rank, with operative work at specified fees per operation. Many men, especially in various surgical specialties, seemed to think a combination of Vienna for grounding in fundamentals and didactic work, with a topping off in Berlin with operative work, was excellent, on account of greater freedom in the matter of operations. Most of the men who became acquainted in Berlin remained there and the reverse was true for Vienna. What effect the present economic and political conditions have had in post graduate work is unknown.

A few men who had worked in Paris were seen and they were enthusiastic. A knowledge of French is imperative, but as Paris is making a bid for the lead in post graduate work, the instruction may in time be offered in English.

Neurology and dermatology seemed to offer the best opportunities.

Judging from personal experience and considerable discussion with men who have studied elsewhere, Vienna occupies a unique position as a post graduate center because of thoroughly organized relations between teachers and students. Teaching is a tradition there; the instructors are well trained, sound clinicians; clinical material in abundance is available; the rule of one hundred per cent autopsies makes only for accuracy; and, what is more important, this teaching can be bought almost as a commodity. The old pre-war American Medical Association of Vienna is completely revived, with the same furniture, the same old registry book on file bearing the names of former members, among them many who have helped to build up medicine in the Northwest; and the same desk secretary, Mrs. Kreidl, in charge. There was a stormy period of rebirth about two years ago, but the differences between the Americans and the Vienna faculty have been largely smoothed over and there is no more friction than is to be expected between two large bodies of men.

This organization has nothing to do with the A. M. A. Any English speaking doctor (there are always representatives from various countries of the British Empire) doing post graduate work in Vienna is eligible for membership; the dues are nominal. There are some social features, but the main function is a clearing house for post graduate courses. One member is elected to act as orientation man for each specialty, to arrange new courses, keep courses posted on the bulletin board in his specialty, in short to attempt to make supply and demand meet. The association has entered into contracts with various members of the faculty to teach certain subjects at a fixed price per hour. The courses cost usually three to five dollars an hour and must be paid for in American money to be divided by the members taking the course, running from two to twenty-five members. The by-laws and constitution of the organization, with a list of courses for which it holds contracts, is embodied in the "Blue Book," which may be obtained from the secretary at a cost of twenty-two cents.

Has there been any deterioration in the post graduate work compared with pre-war days? Several men back on their second, third or even fourth trip say "No." One man in particular, who was back on his fourth trip and had spent a total of two and a half years in Vienna, remarked that he had never had so good a program as this spring.

So far as living conditions are concerned, Vienna is quite safe. There are no food riots. It is not the city it once was, but quite tolerable. Since the stabilization of the crown at about seventy thousand to the dollar, accomplished by stopping the printing presses, there has been a slow but definite improvement in general conditions, with gaining confidence in the deflated currency. The professional classes are recovering a little of their lost ground through readjustment of values. The cost of living is considerably higher than before the war, but still somewhat under the cost here.

The best form of money to carry to Vienna is the American Express Company's travelers' checks, and a roll of greenbacks is always an asset. Letters of credit are a nuisance.

As many of the courses are in English, a knowledge of German is not absolutely necessary, but to one who has a knowledge of German, opportunities are tripled and it is mighty convenient in traveling; so it pays to "plug" on a vocabulary.

REUBEN A. JOHNSON, M.D.

REPORT OF A CASE OF LOCAL MALARIA*

HARRY OERTING, M.D. and CLARENCE E. KJOS, M.D.
St. Paul

G. J. D. Female. Age 37.

Past History. Smallpox 1912. Diphtheria and "Rheumatism" 1914.

Menstrual History. Regular with excessive flowing. In September the patient went over her period four days and took 36 grains of quinine. The period began the next day.

Present Illness. All during the past summer the patient felt indisposed and tired, which she attributed to overwork. About September 24th she contracted a mild cold which lasted about two weeks. On October 11th at 7 p. m., the patient suddenly had a severe chill, duration one hour, followed by fever, headache and profuse sweating most of the night. The following day she felt as well as usual. On October 13th late in the afternoon the patient had a severe headache and felt chilly but did not have a real chill. On October 14th patient felt as well as usual. On October 15th at 10 a. m. there was another sudden severe chill followed by headache and fever and she was sent to the hospital by her physician. On entrance to the hospital at 10 p. m. the temperature was 99.5 and the following afternoon had dropped to normal. The urinary examination was negative. Blood Hgb. 60 per cent; R. B. C., 4,000,000; W. B. C., 5,700. Differential Pmn., 73; Lymph, 22; Trans., 4; Baso., 1 per cent. Wassermann negative. Blood culture taken October 16th, negative. On October 17th at 8 A. M. there was another severe chill and the temperature reached 104 degrees. Blood cultures taken at this time were negative. Blood smears for parasites showed probable malaria. On October 18th patient felt well and wanted to get up and about. On October 19th at 5 a. m. there was another severe chill and the temperature reached 104 degrees. Blood examination, Hgb., 60 per cent; R. B. C., 3,990,000; W. B. C., 9,650. Differential Poly. 52, lymph 37, Lmn. 7, Trans. 2, Baso. 1. One normoblast was seen. Blood smears showed the malaria parasite of the tertian type. A chill was predicted for between 2 and 3 A. M., October 21st. At 1:55 A. M., October 21st, the patient had another typical chill and the temperature reached 104.5 degrees. Quinine therapy was then instituted and there were no further chills. Blood smears taken on October 23rd showed an occasional fourth stage parasite.

Although the government survey shows malaria as endemic in the state, the occurrence of this disease in a person who was born and raised in the immediate vicinity of St. Paul and who has never been away from this district except for a three day trip to Duluth in 1918 seems worth reporting in order to draw attention to the fact that local malaria can and does exist and should be ruled out in all cases with recurrent chills and fever.

*University Medical Service, Ancker Hospital

OBITUARY

DR. WARREN A. DENNIS

Warren Arthur Dennis, second son of Jesse Dennis and Anna Warren, was born on a farm in Walworth County, Wisconsin, December 5, 1869. His death occurred at St. Paul, November 8, 1923. He received his early education in the public and high schools of Sharon, Wisconsin, and after two years spent as a teacher in a district school entered the University of Wisconsin, from which he was graduated with the degree of B.L. in 1891. From then until he entered the medical department of the University of Minnesota his time was spent as an instructor in the Reform School at Chippewa Falls, Wisconsin, where he made a most enviable record.

He received his degree in medicine with the class of 1896 and after a year's internship in the City and County Hospital, St. Paul, he became associated with the late Dr. C. A. Wheaton and Dr. John T. Rogers, under the firm name of Wheaton, Rogers and Dennis. It was here that opportunity afforded him the means to develop his natural talent for surgery, in which special line of work he was later to become so proficient. In 1904 Dr. Dennis severed his connection with the firm and formed an association with Dr. Judd U. Goodrich, which lasted until Dr. Goodrich's death in 1911. Later association was had with Dr. John C. Staley and Dr. James S. Gilfillan. In the autumn of 1920 Dr. Dennis and Dr. Gilfillan joined in the formation of the Miller Clinic.

Dr. Dennis was married in 1904 to Clara Clark, who, with six children, survives him. Dr. Dennis twice answered the call to arms, serving with distinction in the Spanish American War, holding the rank of Major. During the World War he was assigned to the 38th Overseas Division and did notable work in brain surgery. He entered the service with the rank of Major, later being promoted to that of Lieutenant Colonel.

His was a life of unswerving devotion, a surgeon of more than ordinary ability, who gave his patients his devoted, untiring attention and won for him a lasting place in their affections. To have been associated with Dr. Dennis in any capacity was a rare privilege, to have been accounted his friend was an honor.

His co-workers have lost a wise counsellor, his friends a loyal, true hearted comrade, and his patients a beloved physician. Dr. Dennis was prominent in the life of many medical organizations, serving as president of the Ramsey County Medical Society in 1910; president of the Minnesota Academy of Medicine in 1920; and some time president of the Alumni Association of the Medical Department of the University of Minnesota. At the time of his death he was a member of the Council of the Minnesota State Medical Association, Associate Professor of Surgery in his Alma Mater, Surgeon to the Chicago Great Western and the Great Northern Railways, Secretary of the Western Surgical Association and a Fellow of the American College of Surgeons.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

THE MINNEAPOLIS SURGICAL SOCIETY MONTHLY CLINIC DAY

Thursday, December 6th, 1923

ST. MARY'S HOSPITAL
9:00 to 12 A. M.

OPERATIVE CLINICS

Dr. Sweetser	Dr. Farr	Dr. Corbett
Dr. Mann	Dr. Lynch	Dr. Maxeiner
Dr. Webb	Dr. Bratrud	Dr. Zierold
	Dr. Hayes	

ST. MARY'S HOSPITAL
2 to 4 P. M.
Pathological Meeting

DINNER AT ST. MARY'S HOSPITAL
6:30 P. M.

Followed by the paper of the evening
"ORAL SURGERY"

by

Dr. T. W. Brophy of Chicago

Discussion by Dr. H. P. Ritchie of St. Paul

LYON-LINCOLN COUNTY MEDICAL SOCIETY

At the regular annual meeting of the Lyon-Lincoln County Medical Society held Tuesday, October 16, 1923, the following officers were elected for the coming year: President, Dr. J. B. Robertson, Cottonwood; vice president, Dr. Charles Germo, Balaton; secretary-treasurer, Dr. H. M. Workman, Tracy. Dr. A. L. Vadheim, of Tyler, was elected to act as delegate to the 1924 annual meeting of the State Association and Dr. B. C. Ford, Marshall, alternate.

ST. LOUIS COUNTY MEDICAL SOCIETY

Dr. T. R. Martin, of Duluth, was elected president of the St. Louis County Medical Society at the annual banquet and meeting held at the Chamber of Commerce building, Duluth, Thursday, October 18. Other officers elected for the ensuing year were: First vice president, Dr. James Steward, Cloquet; second vice president, Dr. J. R. Manley, Duluth; secretary-treasurer, Dr. F. H. Magney, Duluth, who was re-elected.

The election followed the banquet, which was well attended. During the meeting Dr. S. H. Boyer gave a talk on "Professional Ethics."

OF GENERAL INTEREST

Dr. E. M. Kingsbury, of Clearwater, and Miss Hannah Jane Nelson were married at Clearwater October 8.

Announcement has been received of the birth of a son to Dr. and Mrs. Alvah Conley, of Cannon Falls, Tuesday, October 16.

Dr. H. Boyeson, a graduate of the medical school of the University of Iowa, has located at Truman for the practice of his profession.

Dr. C. A. Lester, formerly of Winona, is now engaged in the practice of his specialty, diseases of the eye, in Eau Claire, Wisconsin.

Dr. and Mrs. A. W. Ide, of St. Paul, have returned from a four months' trip to Europe, where Dr. Ide visited the principal hospitals and clinics.

Dr. J. P. Von Berg, of Albert Lea, who suffered injuries as the result of an automobile accident, November 5, is reported as recovering nicely.

Dr. H. W. Hundling, formerly of the Mayo Clinic, Rochester, is now associated in the practice of medicine with the Sanders-Warr Clinic, Memphis, Tenn.

Professor Finsterer, of Vienna, gave a Mayo Foundation lecture before the Mayo Clinic and Fellowship staffs, October 19. His subject was "Gastro-jejunal Ulcer."

Dr. A. E. Mark, of the Earl Clinic, St. Paul, will leave January 1, 1924, for Long Beach, California, where he will locate and will specialize in internal medicine.

Dr. A. A. Meyer, of Melrose, was elected mayor at the biennial city election held recently in Melrose. Mr. Meyer succeeds Andrew Kolb, who had been mayor for two terms.

Dr. and Mrs. Walter E. Camp, of Minneapolis, have returned from a three months' tour of France, Switzerland, Austria and England, where Dr. Camp visited the principal clinics of Europe.

Announcement has been made of the marriage of Dr. Kenneth Bulkley, of Minneapolis, to Mrs. Mary Gosling, nee Mary Saunders, of St. Paul, which took place in St. Paul, November 6, 1923.

The Abbott Hospital, Minneapolis, is to receive a fund of \$500,000 through a bequest made by the late Oliver C. Wyman, of Minneapolis, in his will, which was filed for probate in the Hennepin County District Court in November.

Dr. Lysander P. Foster, known as Minneapolis' oldest physician, celebrated his eighty-seventh birthday November fourth. Dr. Foster came to Minnesota in 1848 when there were but two white men living where Minneapolis now stands.

Dr. Botho Felden has become a member of the Nicollet Clinic, of Minneapolis, as dermatologist. Dr. Felden served three years in the dermatological clinic of Professor Max Joseph, of Berlin, and for two years was in the clinic of Professor Arndt at the Charité Hospital.

The marriage of Dr. B. A. Dvorak, of New Prague, to Miss Beatrice Pesek, of Minneapolis, took place Monday, October 15, in Minneapolis. Dr. and Mrs. Dvorak are now at home in Ames, Iowa, where Dr. Dvorak will be in charge of the students' infirmary at the state college.

Dr. Helen H. Hielscher, of Mankato, chairman of hospitalization of the Minnesota department of the American Legion auxiliary, is to be presented with an appropriate medal as president of the first state department of the auxiliary and president of the first national auxiliary convention.

Dr. W. F. Cantwell has closed his practice at Littlefork to become associated in the practice of surgery with Dr. Fred Lund, of Boston. Dr. and Mrs. Cantwell have been in New York for the past month and expect to establish their home in Boston some time during December.

Dr. and Mrs. A. G. Beyer have returned to Red Wing following a stay of several months in Vienna, where Dr. Beyer took postgraduate work in the treatment of diseases of the eye, ear, nose and throat. Dr. Beyer plans to practice his specialty in his former location at Red Wing.

Dr. W. L. Sogge, of Windom, was elected president of the Minnesota State Sanitary conference which was held in St. Paul in November. Other officers elected for the coming year were: Vice president, Dr. G. G. Balcom, Lake Wilson; secretary and treasurer, Dr. A. J. Chesley, St. Paul.

"The Physical Basis of Radiotherapy" was the subject of an address delivered by Professor L. M. Henderson at a meeting of the Minnesota Pathological Society held at the Institute of Anatomy, University of Minnesota, November 20. Dr. E. T. Bell also read a paper on "Sarcoma of the Bones."

At the meeting of secretaries of the various state medical associations held in Chicago in November, 1923, attention was called to the circulation of *Hygeia* in the different states of the Union. The widespread circulation of this lay magazine was conspicuously brought out on a specially prepared map, showing the number of subscriptions in each state. Minnesota has 425 subscriptions or 17 per 10,000 population, which puts us twenty-ninth in the per capita list of states. Arizona made the best showing with 85 per 10,000.

At a meeting of the Administrative Board of the Medical School of the University of Minnesota, held November 6, 1923, the following nominations were approved and recommended: Dr. Harold J. Goss as Instructor in Ophthalmology and Oto-Laryngology; Dr. Joseph F. Bickel as Assistant in Obstetrics and Gynecology; Dr. C. A. Fjelstad as Assistant in Ophthalmology and Oto-Laryngology; Dr. Eula B. Butzerin as Instructor and Director of Public Health Nursing; Miss Alma Haupt and Miss Alice Fuller as Instructors in Preventive Medicine and Public Health.

Dr. R. E. Farr, of Minneapolis, has planned for medical graduates a series of short intensive courses in clinical demonstrations of the various methods of employing local anesthesia at St. Mary's Hospital, Minneapolis. These courses will begin Monday, January 7, 1924, at 9 a. m., at St. Mary's Hospital. Two courses will be given each month, with classes beginning on the first and third Mondays. They will be largely didactic, covering the drugs used, their preparation, etc., the anatomy of the sensory nervous system and laboratory courses on the cadaver. In addition to demonstrations, those taking the course will practice the introduction of the needles and segmental dissection.

The Children's Hospital, Inc., of Saint Paul, will be opened January 1, 1924. The hospital will occupy temporary quarters at the corner of Smith avenue and Walnut street. The Board of Trustees of the Children's Hospital has made arrangements with St. Luke's Hospital, which is adjacent, to provide training for nurses. The business management of the Children's Hospital has purchased a permanent site at 311-319 Pleasant avenue and will occupy the present quarters until the new hospital is built. The Children's Hospital, which is non-sectarian, will receive children from birth to adolescence and will be prepared to give them all necessary medical and surgical aid. The

hospital will have a complete staff, of which Dr. W. R. Ramsey will be chief.

"Human Cancer from the Standpoint of Heredity" will be the subject of a lecture to be given by Professor H. Gideon Wells, of the University of Chicago, before the Mayo Clinic and Fellowship staffs at Rochester, December 4. This is the fourth in a series of lectures on heredity which was arranged by the Mayo Foundation in co-operation with the Rochester chapter of Sigma Xi and the Universities of Wisconsin, Minnesota, Nebraska and Washington (St. Louis, Mo.) this fall. The first of these was given Monday evening, October 29, at the University of Wisconsin by Professor William Ernest Castle, professor of zoology at Harvard University on "Heredity—The General Problem and Its Historical Setting." The same lecture was delivered at Rochester, Tuesday, October 30, at Minneapolis Wednesday, at Omaha Thursday, and at St. Louis Friday. Two lectures delivered in November were: "The Inheritance of Acquired Characteristics," by Professor J. A. Detlefsen, Wistar Institute, Philadelphia, and "Heredity in Relation to Cancer," by Miss Maud Slye, of the University of Chicago. Two other lectures to be given early next year on dates not yet fixed will be on "The Inheritance of Sex," by Prof. C. E. McClung, University of Pennsylvania, and "Eugenics," by Prof. M. F. Guyer, University of Wisconsin.

J. M. McConnell, State Superintendent of Education, has been officially notified of the opening of the Prize Essay Contest of the American Chemical Society in which all students of high and secondary schools in the State of Minnesota have been invited to compete in a national contest for \$10,000 in cash prizes and scholarships to Yale, Vassar and other universities and colleges.

The contest, which is the result of the gift of Mr. and Mrs. Francis P. Garvan, of New York, is a memorial to their daughter, Patricia, and is intended to stimulate interest among high school students in the development of chemical science in this country. All arrangements for the contest are in the hands of the Committee on Prize Essays of the American Chemical Society, with headquarters at the Munson Building, New York City. Six prizes of \$20 in gold are to be awarded in each State in the Union and scholarships to Yale and Vassar will be given for the six best essays in the United States. These scholarships will carry with them tuition for four years in chemistry or chemical engineering and \$500 a year in cash. In addition to these awards many other scholarships will be offered through various universities and colleges. A set of five books which include *Creative Chemistry* by Slosson, *The Riddle of the Rhine* by Lefebure, *The Life of Pasteur* by Vallery-Radot, *Discovery*, *The Spirit and Service of Science* by Gregory, and *The Future Independence and Progress of American Medicine in the Age of Chemistry* by a Committee of the American Chemical Society, is being sent from the New York headquarters to every accredited high and secondary school in the country, and sets of these reference books are being placed in the leading libraries of the State for the use of students who enter the competition.

The contest which has the endorsement of Dr. John J. Tigert, Commissioner of Education of the United States, is fully described in a pamphlet, which will be distributed through the high schools and the libraries. This pamphlet

contains in addition to facsimile letters of endorsement from Dr. Tigert, and from Dr. E. C. Franklin, President of the American Chemical Society, a full outline of the terms and conditions of the contest together with the letter of gift of Mr. Garvan. The entire supervision of the contest and the award of the prizes has been left to the American Chemical Society by Mr. Garvan. H. E. Howe, editor of "Industrial and Engineering Chemistry," the official organ of the American Chemical Society, has been named as Chairman of the Committee, and he is assisted by Dr. Wilder D. Bancroft, Professor of Chemistry at Cornell University, one of the best known men in educational circles in this country and president of the American Chemical Society in 1910; by Dr. Charles H. Herty, president of the Synthetic Organic Manufacturers' Association and president of the American Chemical Society in 1915 and 1916; and by Alexander Williams, Jr., of New York, who is acting as secretary of the committee. It is the plan of the committee in charge to appoint a national committee of fifteen who will be chosen from all walks of life; from among the leading educators, scientists and public spirited men and women of the country. It will be the duty of this committee to judge the essays and to award the scholarships in the national competition. They will be assisted in their work by state committees of eleven whose duty will be to award the prizes in the state competitions.

NEW AND NON-OFFICIAL REMEDIES

In addition to the articles enumerated in the November issue, the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion:

CHEPLIN'S BIOLOGICAL LABORATORIES:

Cheplin's B. Acidophilus Milk.

LEDERLE ANTITOXIN LABORATORIES:

Diphtheria Toxin Antitoxin Mixture (0.1 L+)-Lederle, 30 c.c. vials.

H. K. MULFORD COMPANY:

Diphtheria Antitoxin Standard-Mulford.

Diphtheria Antitoxin Superconcentrated-Mulford.

PARKE, DAVIS & COMPANY:

Antidysenteric Serum-P. D. & Co.

Protein Extracts Diagnostic-P. D. & Co.:

Colon Bacillus Protein Extract Diagnostic-P. D. & Co.; Gonococcus Protein Extract Diagnostic-P. D. & Co.; Micrococcus Catarrhalis Protein Extract Diagnostic-P. D. & Co.; Pneumococcus, Type 1, Protein Extract Diagnostic-P. D. & Co.; Pneumococcus, Type 2, Protein Extract Diagnostic-P. D. & Co.; Pneumococcus, Type 3, Protein Extract Diagnostic-P. D. & Co.; Pseudodiphtheria Bacillus Protein Extract Diagnostic-P. D. & Co.; Staphylococcus Albus Protein Extract Diagnostic-P. D. & Co.; Staphylococcus Aureus Protein Extract Diagnostic-P. D. & Co.; Staphylococcus Citreus Protein Extract Diagnostic-P. D. & Co.; Typhoid Bacillus Protein Extract Diagnostic-P. D. & Co. Silver Nitrate in Capsules-P. D. & Co.

New Tuberculin B. E. Dried.—To obtain this product, tubercle bacilli are dried, ground for several months in a ball mill, the finely disintegrated bacillary bodies are mixed with a suitable base and made into tablets. Each tablet represents a definite amount of New Tuberculin B. E. Dried.

Tablets Tuberculin B. E.-P. D. & Co.—New Tuberculin B. E. Dried, marketed in vials No. 1 of ten tablets, each tablet containing 0.0001 mg.; in vials No. 2 of ten tablets, each tablet containing 0.001 mg.; in vials No. 3 of ten tablets, each tablet containing 0.01 mg.; in vials No. 4 of ten tablets, each tablet containing 0.1 mg.; in vials No. 5 of ten tablets, each tablet containing 1 mg.; also marketed in packages of 5 vials, Nos. 1, 2, 3, 4 and 5 inclusive. Parke, Davis & Co., Detroit.

New Tuberculin T. R. Dried.—The mass culture of tubercle bacteria is washed repeatedly, agitated again in water, washed, ground to complete disintegration, extracted repeatedly with water, and the water-insoluble material, instead of being ground to form a suspension in water as in New Tuberculin T. R. Liquid, is dried. The dried material is thoroughly mixed with a suitable diluent. Each tablet represents a definite amount of dried tubercle bacilli.

Tablets Tuberculin T. R.-P. D. & Co.—New Tuberculin T. R. Dried, marketed in vials No. 1 of ten tablets, each tablet containing 0.0001 mg.; in vials No. 2 of ten tablets, each tablet containing 0.001 mg.; in vials No. 3 of ten tablets, each tablet containing 0.01 mg.; in vials No. 4 of ten tablets, each tablet containing 0.1 mg.; in vials No. 5 of ten tablets, each tablet containing 1 mg.; also marketed in packages of five vials Nos. 1, 2, 3, 4 and 5, inclusive. Parke, Davis & Co., Detroit. (Jour. A. M. A., Oct. 6, 1923, p. 1207.)

Sal-Ethyl.—A brand of ethyl salicylate-N. N. R. For a discussion of the actions, uses and dosage of ethyl salicylate, see New and Non-official Remedies, 1923, p. 272. Sal-Ethyl is supplied in the form of Sal-Ethyl Capsules, 5 minims. Parke, Davis & Co., Detroit. (Jour. A. M. A., Oct. 13, 1923, p. 1285.)

Antidysenteric Serum-P. D. & Co.—An antidysenteric serum (see New and Non-official Remedies, 1923, p. 287) obtained from horses immunized against several strains of Shiga and Flexner types of dysentery bacilli. It is marketed in packages of one syringe containing 10 c.c.; in packages of one vial containing 10 c.c.; in packages of one vial containing 20 c.c. Parke, Davis & Co., Detroit. (Jour. A. M. A., Oct. 20, 1923, p. 1363.)

Cheplin's B. Acidophilus Milk.—A milk culture of bacillus acidophilus, containing not less than fifty million of viable B. acidophilus per c.c. at the time of sale. For a discussion of the actions and uses of bacillus acidophilus milk, see Lactic Acid-Producing Organisms and Preparations (Jour. A. M. A., Sept. 8, 1923, p. 831). For adults the dose is from 500 c.c. to 1,000 c.c. Cheplin's B. Acidophilus Milk is marketed in bottles containing respectively 200 c.c. and 400 c.c. Cheplin Biological Laboratories, Inc., Syracuse, N. Y.

Diphtheria Antitoxin Standard (Purified and Concentrated Globulin).—Formerly marketed as diphtheria antitoxin concentrated (globulin). (See New and Non-official

Remedies, 1923, p. 283.) This brand of diphtheria antitoxin concentrated is also marketed in packages of one syringe containing 20,000 units. H. K. Mulford Company, Philadelphia.

Diphtheria Antitoxin Superconcentrated.—The product resembles serum antidiphthericum purificatum U. S. P. It differs in that the volume per thousand units is smaller, and the protein content is claimed to be lower. It is marketed in packages of one syringe containing respectively 1,000 units, 3,000 units, 5,000 units, 10,000 units and 20,000 units. H. K. Mulford Co., Philadelphia.

Protein Extracts Diagnostic-P. D. & Co.—In addition to the Protein Extracts Diagnostic-P. D. & Co. listed in The Journal, Sept. 15, 1923, p. 929, the following have been accepted: Colon Bacillus Protein Extract Diagnostic-P. D. & Co.; Gonococcus Protein Extract Diagnostic-P. D. & Co.; Micrococcus Catarrhalis Protein Extract Diagnostic-P. D. & Co.; Pneumococcus, Type 1, Protein Extract Diagnostic-P. D. & Co.; Pneumococcus, Type 2, Protein Extract Diagnostic-P. D. & Co.; Pneumococcus, Type 3, Protein Extract Diagnostic-P. D. & Co.; Pseudodiphtheria Bacillus Protein Extract Diagnostic-P. D. & Co.; Staphylococcus Albus Protein Extract Diagnostic-P. D. & Co.; Staphylococcus Aureus Protein Extract Diagnostic-P. D. & Co.; Staphylococcus Citreus Protein Extract Diagnostic-P. D. & Co.; Typhoid Bacillus Protein Extract Diagnostic-P. D. & Co. Parke, Davis & Co., Detroit.

Diphtheria Toxin-Antitoxin Mixture (0.1 L+)-Lederle.—This product (see New and Non-official Remedies, 1923, p. 284) is also marketed in 30 c.c. vials. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., Oct. 27, 1923, p. 1441.)

PROPAGANDA FOR REFORM

J. T. Ainslie Walker's Latest Intestinal Disinfectant.—About a year ago a flood of reprints mailed from London reached the editors of American medical journals and others. The reprint dealt with "A New Suggestion in the Treatment of Puerperal Eclampsia," by Captain J. T. Ainslie Walker. The reprint was to the effect that as "the problem of intestinal disinfection has been solved" rational treatment of the condition was greatly simplified, but it was not stated how the problem of intestinal disinfection had been solved. A few months later, the same editors received reprints which dealt with "Dimol" in the treatment of summer diarrhea in infants, and an article by A. N. M. Davidson. Still more recently, American medical editors have received a pamphlet mailed from England which purports to be a book sent for review. This pamphlet is an obvious puff for Dimol by J. T. Ainslie Walker. Dimol is a preparation introduced by J. T. Ainslie Walker, of England, and is sold in this country by the Anglo-French Drug Co. Some time ago Mr. Walker was connected with the Barrett Manufacturing Co. to exploit "Pyxol," a proprietary disinfectant resembling compound solution of cresol. Later, Mr. Walker introduced his first "intestinal germicide" under the proprietary name "Trimethol." This preparation, which was reported unfavorably by the Council on Pharmacy and Chemistry, appears to have been very similar to the product now exploited as Dimol. Mr. Walker would have us

believe they are different, but the American agent of Dimol makes this claim: "Dimol is the registered name for the product known in the U. S. A. in 1914 under the name 'Trimethol.'" (Jour. A. M. A., Oct. 6, 1923, p. 1224.)

Colorless Iodin Preparations.—The so-called colorless iodine preparations do not contain iodine in the free state, but some form of combined iodine, chiefly iodide. For instance, Tinctura Iodi Decolorata, N. F., is a solution of sodium iodide and ammonium iodide obtained by mixing iodine and sodium thiosulphate, stronger ammonia water and alcohol. When tincture of iodine is used externally, it is with the view of obtaining the therapeutic action of free iodine. Since the colorless iodine preparations do not contain free iodine, their external use as a substitute for tincture of iodine is irrational. When tincture of iodine is given internally, the free iodine contained in it is converted into iodide before absorption. Therefore, tincture of iodine and the so-called colorless iodine preparations given internally have essentially the same therapeutic effect. However, if a colorless iodine preparation is to be administered, it would be simpler and more rational to administer sodium iodide. (Jour. A. M. A., Oct. 20, 1923, p. 1383.)

The Action of Arsenicals in the Body.—Voegtlin and his associates in the Hygienic Laboratory of the U. S. Public Health Service have observed that certain compounds containing sulphur groups in the SH form are able to counteract the toxic effects produced by arsenoxid on trypanosomes and a representative mammal. They advance the theory that arsenic in certain trivalent forms is a specific poison for the SH group in the trypanosome organism, and that arsenic causes death of the cells by interfering with the oxidative processes. Voegtlin and his associates concluded that the failures reported in the treatment of the later stages of syphilis are due to the fact that arsphenamin, neoarsphenamin and silver arsphenamin lack the essential penetrative power for the infected tissues, and for this reason they do not reach the last parasites in sufficient amounts to cause their death. In the effort to secure a more complete sterilization of syphilitic patients in the more advanced stages of the disease, sulpharsphenamin, tryparsamid, and 3-amino-4-oxypyridine arsenic acid are suggested for trial as remedies of superior penetrative power. (Jour. A. M. A., Oct. 27, 1923, p. 1442.)

Van Ess.—The Van Ess Laboratories, Inc., Chicago, put out "Van Ess Special Dandruff Massage" and "Van Ess Liquid Scalp Massage." "Van Ess" is sold with the claims that it will make hair grow and that it will stop falling hair in two weeks. The A. M. A. Chemical Laboratory reports that Van Ess Special Dandruff Massage is a perfumed liquid which separates into two layers on standing. The upper layer consists essentially of a petroleum oil which appears to be kerosene. The lower layer appears to be composed of water and alcohol containing small amounts of quinine sulphate, coloring matter and perfume. The Laboratory concludes that it is probable that a mixture of 35 parts of kerosene, 15 parts of alcohol denatured by the addition of 2 grains of quinine sulphate per fluid ounce and 50 parts of water would have whatever therapeutic properties the Van Ess Special Dandruff Massage possesses. (Jour. A. M. A., Oct. 27, 1923, p. 1461.)

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of October 10, 1923

DR. A. S. HAMILTON, Presiding

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, October 10, 1923. The meeting was called to order by the president, Dr. A. S. Hamilton. There were 29 members and 8 visitors present.

There were no papers read at this meeting, but the following case reports were given:

DR. H. P. RITCHIE reported a case (and showed lantern slide) of a bicornate uterus removed by vaginal hysterectomy.

Mrs. E. W., a patient of Dr. Frank Manson, aged 59, the mother of three children, had complained of cystocele and rectocele for several years. For the past year a vaginal discharge led to an examination revealing an ulceration of the cervix so gross as to suggest malignancy. Biopsy proved it to be not so. But the suggestion of operation upon the cervix and cure of the prolapse met with her approval. This was done May, 1923. In view of the ulceration, the procedure selected was an interposition operation. The usual steps were accomplished to the bringing down the left horn, which, as illustrated, was so small that it was most evident that it would be of no value as a support. It was then decided that the broad ligaments were better used, so the left ligaments were secured. It was then discovered that there were no right ligaments, but instead there was felt a hard body suggesting a malignant infiltration. But in the manipulation, the right horn was uncovered to find it the site of a fibroid. Back of this was a movable ovarian cyst of appreciable size. It was not until the right horn was discovered that the conditions were read out. The operation was completed and she recovered.

The features of the case are: The lack of symptoms leading to a diagnosis; the fact that this congenital deformity is a mother uterus; the presence of complicating tumors; and the almost exact symmetry of the surgical specimen showing a common cervix.

DR. A. R. COLVIN reported a case, with operation, of fracture of the anatomical neck of the humerus and dislocation of the head fragment into the axilla.

DR. A. SCHWYZER reported two cases, one of carcinoma of the stomach, the other carcinoma of the uterus, both operated and treated with radium.

DISCUSSIONS

DR. COLLINS (Duluth): I feel as though my experience along this line is very limited compared with that of the men in the Twin Cities. I can distinctly remember the case of a man I saw some years ago. He operated a lumber yard and was in thriving circumstances up to the time he came under my observation, at which time he had symptoms of a gastric carcinoma. We went over him carefully and finally

decided to do an exploratory operation. At operation we found both walls of the stomach involved with carcinoma and about the same involvement in both, each about three and one-half inches in diameter. I remember searching over the surface of the liver and finding no involvement. I did no further operation except to close him up. I told him quite frankly what the situation was and he closed up his affairs and went to California. About a year afterward I heard from him and he had been touring all over California. About fourteen months after the exploration he died. I feel justified in leaving this growth alone. We have seen two or three not quite so extensive as this since that time. I did do an extensive resection and lost one case after two or three months.

DR. SCHWYZER mentioned the fact that the blood supply was insufficient in the remnant of stomach left after resection. It occurred to me that it was possible to increase the circulation of the remaining stomach wall by scarifying and bringing the omentum around it and anchoring to encourage adhesions.

DR. MAGIE (Duluth): The doctor's first case brought to my mind a case I had about twenty years ago. It has



Bicornate uterus removed by vaginal hysterectomy (Ritchie).

occurred to me since, if it is not possible for carcinoma to die. I don't see any reason why occasionally they might not die out from natural causes within themselves. I had a case of carcinoma of the stomach involving the lower end, or pylorus. After opening the abdomen, I found it was inoperable and did a gastroenterostomy. The man got well and lived for more than two years afterwards, to my knowledge, and as far as the tumor was concerned, it disappeared entirely.

The thought comes to my mind if it is not possible occasionally for these tumors to die out. I have had surgeons

tell me that they have had similar experiences with patients who were suffering with cancer of the stomach.

DR. COVENTRY (Duluth): I speak largely on the question of radium in Dr. Schwyzer's case of carcinoma of the uterus. If you go over the literature you will find the mortality rate in cases of cancer of the uterus after five years, which have been operated, is approximately from 85% to 90%. We are switching from the operative procedure and going over to radium. We have given as much as 9,600 mg. in one dose, and it is remarkable the way these cases shrink down until no ulceration or visible evidence of cancer is apparent. I might criticize one point: The doctor says he uses the cautery and then uses radium. Then he does not know which is doing or has done good, the radium or the cautery.

At a recent meeting I heard Dr. Crile and his associates discuss this subject, and for the last year and a half they have been refusing to operate all cases of carcinoma of the uterus except carcinoma of the body of the uterus, and are using radium and x-ray in other cases of carcinoma of the uterus. The outcome of this will be most interesting to compare the mortality rate from the operative and radium standpoints. The case he reports having treated with radium I would not now attempt to operate.

DR. H. B. SWEETSER: I think that Dr. Schwyzer is right in refusing to operate on a carcinoma of the uterus which has receded as this one has, following his application of cautery and radium. Some years ago I had occasion to look up this very subject, and Dr. Lynch, of San Francisco, reported a patient upon whom he had used radium with the result that his case, which was inoperable, became apparently operable. He then did a radical operation, and found active foci of carcinoma which had apparently been held in abeyance far out in the broad ligaments, and apparently his operation lighted up an active process, inasmuch as his patient died shortly afterwards from a recurrence. Radium, as we know, has a penetrating influence over a not very large area, and Percy claims that the dull heat which he uses has a far greater penetration than radium. I agree with Dr. Schwyzer that the combined application of cauterization with radium is better than either alone, and this is the method which we use. I have one patient who is still free from recurrence four years after removal of the uterus with cautery and the application of radium. I have another patient who is well three years after such treatment. I do not think we can get better results than this by a radical operation. We can never be sure how widespread the carcinomatous process is, and cutting through apparently healthy tissues may result in disaster. Our radiologist advises that a cautery should be used, and that radium be applied immediately following such cauterization.

DR. F. A. DUNSMOOR: I would say first of all, that in my opinion it is only those cases which have no glandular involvement that promise us any hope for a complete cure, and that the only operation which should be made where there is glandular involvement is that made for temporary relief, like an intestinal anastomosis for obstruction.

I am also convinced that the application of the actual cautery is much more likely to produce a cure than the use of the Percy method.

In Dr. Schwyzer's case I certainly endorse his opinion as to the sound judgment exhibited when he used the radium instead of resort to hysterectomy in such an extreme case.

In answer to the doctor's question as to an opinion regarding the cause of the slough or necrosis in the stomach following the removal of the cancerous growth, will say, it is quite possible that the incision for the anastomosis on the anterior surface of the stomach may have shut off some of the blood supply at the site of the original operation and Dr. Schwyzer may have gotten a better result had he made his anastomosis on the posterior side of the stomach.

DR. E. S. JUDD (Rochester): Dr. Schwyzer, in reporting these cases, has brought up some interesting and important points. The question as to whether radium or the cautery will ever convert an inoperable condition into an operable one was brought out both in the case of malignancy of the stomach and that of carcinoma of the cervix. Our experience makes us feel that if we start to treat malignancy by radiation or the cautery, it is probably better to continue with that line of treatment than to institute any surgery.

The stomach case was interesting, though it is probably similar to cases reported previously. In a few instances we have made an exploratory incision and found what we thought to be an inoperable malignancy of the stomach, and had the patient live a considerable time afterwards—long enough so that we questioned that the lesion was really malignant. I doubt very much whether the change produced by radium would make the condition operable, and that the man could be benefited by removing the lesion at this time. I doubt very much from Dr. Schwyzer's description but that his case was malignant.

When we first began to treat malignancy of the cervix with the cautery, we had the patient come back later, after the ulcerated and burned surface had healed and at that time removed the remainder of the uterus by a total abdominal hysterectomy. We have also carried out this procedure in quite a number of cases in which the malignant ulcerating surface had been healed over after the use of radium. In the first place we often found that there was no demonstrable evidence of malignancy in the uterus after the carcinoma of the cervix had been destroyed by the radium. This, however, did not mean that the malignancy had been eradicated as it frequently sprung up later in the lymphatics. It therefore seemed that we were operating on these cases unnecessarily. We also found that the abdominal operation was difficult to perform as it was necessary to expose the ureters and the base of the bladder.

As I stated before, I think our experience rather justifies our feeling that it is seldom, if ever, that the inoperable lesion is converted into an operable one by radium or x-ray.

DR. A. T. MANN reported a case of ulcerating carcinoma of the right breast.

Mrs. T., about 47. (Operated five years ago, still living). Cancer paste had been used on her by a quack and when I saw her first she had a raw red granular mass 2 by 2½ inches in the upper outer quadrant, reaching across the midline of the breast. The mass of the tumor seemed to extend into the breast tissue about three-fourths of its thick-

ness. The axillary glands were palpable, but not large. It seemed almost a forlorn hope to operate her. A complete breast operation was done, however, five years ago. There were secondaries in the axillary glands and in one close below the clavicle against the main vein where it runs through under the clavicle. Microscopic examination showed an adeno-carcinoma. She healed nicely. She was given a course of x-ray and radium treatment. About one year later small secondaries appeared at or near some of the stitch-marks, from pin-head to a little larger in size. She was again given a course of x-ray and radium. The nodules disappeared and she remained well for over a year and a half, when they again appeared and were again treated as before. About nine months ago two or three very small ones appeared in the same place. These were again treated and disappeared. At the present time she is apparently well. After the second x-ray and radium treatments distinct edema of the arm of a moderately good size showed up, though she had had a slight edema before. This has grown somewhat better but still persists.

How long she may stay well, or whether further secondaries may come, I do not know. Now at the five-year period she seems well.

The x-ray and radium do not kill all the cancer cells. They kill some of the cells and they stop the growth of others. These weakened cancer cells no doubt become hedged in by scar tissue. Some of these weakened cells may be so hemmed in by the scar tissue that they are not able to go on increasing but lie more or less dormant. Other groups of them, after a longer or shorter period of time, months or years, gradually gain enough vitality to become active, to grow into and through this tough surrounding scar tissue and show up as late secondary cancer growths. Further radium and x-ray treatments repeat the periods of the death of some of the cancer cells and the stunted and retarded growth of others. This explains the necessity of keeping the cases under long periods of observation so that if these secondary growths start to grow they may be seen and the treatment may be repeated so that there may be another period of quiescence, but also with the hope that finally the growth may be stopped altogether. What has been said about the weakened vitality of some of the cancer cells after treatment and their later encystment in scar tissue, explains the reason why a late secondary operation may start a rapid and unexpected growth of the cancer which may be disastrous to the patient, by cutting through some of these scar areas and liberating a few cancer cells into fresh tissue where they can have abundant nourishment and grow with great vitality.

DISCUSSIONS

DR. H. B. SWEETSER: I assume that Dr. Mann believes, as we all do, that radium inhibits cancer cells, and in this connection I would like to relate an experience in a case where radium was not used.

Twelve years ago I operated upon a woman for cancer of the breast, and she remained without recurrence until about two years ago. At that time, coming downstairs she bumped the scar against the newel post, and very shortly a cancerous nodule appeared in the scar. My query is—

were cancer cells there from the time of the primary operation, which had become encysted in the scar tissue and had remained latent, and did the trauma stimulate these dormant cancer cells which might have been there? Or was this a new cancer occurring in a patient with a predisposition, coming there as a result of the trauma?

DR. L. C. BACON: A case which I saw many years ago may help to answer Dr. Magie's question "Whether cancer cells die?" A woman came to me with a large nodule under the pectoral margin in the right axilla. She gave me a history of having a lump in the breast some months before and that the lump had disappeared. At operation the mass in the axilla gave the impression of being a carcinomatous lymphatic and the fact that there were many lymphatics made me quite certain, and I removed the breast at the same time. The pathological examination showed that the nodules in the axilla were cancerous, but that the breast was absolutely free from cancer cells. At the outer portions of the breast we found some scar tissue, but at no place in the breast were we able to find any carcinomatous cells. The cancerous growth in the axilla must have originated in the adjacent breast and it is quite certain that the primary growth had disappeared.

DR. A. E. BENJAMIN reported the following case:

I wish to report a case of interest. A child 8 years old who came with a history of having abdominal pains for six months with ascites gradually developing to such an extent that the abdomen was very tense. Patient was very anemic, vomiting considerably, bowels alternating between diarrhea and constipation, with some enlargement of the right testicle, and x-ray showing great dilatation of coils of intestine and a shadow—possibly an enlarged spleen. A large area of dulness showed that the spleen was enlarged.

It was apparent that owing to the obstruction of the bowels something had to be done. Pre-operative diagnosis was possible sarcoma of the spleen with ascites.

Operation was done to drain off the fluid and relieve obstruction. We found a spleen four or five times normal size, with many adhesions throughout the intestines, and bloody serum. Part of the omentum was removed for diagnostic purposes and some adhesions broken up and a drain left in. I gave the parents an unfavorable prognosis. Deep x-ray therapy of 200,000 volts in three treatments was employed. The operation was about two months ago and the x-ray treatment followed shortly after that. Two weeks ago I saw the child with a much changed appearance. He was a little anemic, but the abdomen had flattened out almost entirely. He was eating three meals a day. He still complained, however, of pain over the right testicle which was considerably enlarged and tender. We operated and removed what appeared to be, macroscopically, a sarcoma, and microscopically was found to be round-celled sarcoma. The child did very well and went home in about a week's time and apparently in perfect condition.

I don't think I have ever seen such a change in the appearance of a patient in so short a time, but I cannot hold out a very favorable prognosis. I think that metastatic growths are likely to occur in other parts of the body, and would like to know if that is the opinion of others here.

PHYSICIANS LICENSED AT THE JUNE (1923) EXAMINATION TO PRACTICE MEDICINE IN THE STATE OF MINNESOTA

BY EXAMINATION

<i>Name</i>	<i>School and Date of Graduation</i>	<i>Address</i>
Alberts, Max Wm.....	U. of Minn., M.B., 1923.....	St. Joseph's Hospital, St. Paul
Anderson, Arnold Sibert.....	U. of Minn., M.B., 1923.....	Milan, Minn.
Anderson, John Gordon.....	Harvard, M.D., 1921.....	Rochester, Minn.
Backe, Irma	U. of Minn., M.B., 1923.....	Kenyon, Minn.
Blumenthal, Jacob	U. of Minn., M.B., 1923.....	1901 Elliot Ave. So., Minneapolis
Branham, Donald Stark.....	U. of Minn., M.B., 1923.....	509 Forest Ave., Minneapolis
Carlson, Herbert Austin.....	U. of Minn., M.B., 1923.....	General Hospital, Minneapolis
Endres, Wm. Jos.....	U. of Minn., M.B., 1923.....	203 Buckingham Hotel, Minneapolis
Erickson, John L.....	U. of Minn., M.B. and M.D., 1923...	Twin Valley, Minn.
Frawley, John Milan.....	McGill, M.D., 1919.....	Rochester, Minn.
Gamble, Paul Middleton.....	U. of Minn., M.B., 1923.....	Ancker Hospital, St. Paul
Ginsberg, Harry	U. of Minn., M.B., 1923.....	1608 11th Ave. S., Minneapolis
Gronvall, Paul Russell.....	U. of Minn., M.B., 1923.....	2515 10th Ave. S., Minneapolis
Harmon, Gaius Edward.....	U. of Minn., M.B., 1923.....	Ancker Hospital, St. Paul
Heck, Wm. Wilfred.....	U. of Minn., M.B., 1923.....	613 North St., St. Paul
Hullsiek, Richard Benj.....	U. of Minn., M.B., 1923.....	161 Macalester Ave., St. Paul
Holt, John E.....	U. of Minn., M.B., 1923.....	2542 Chicago Ave., Minneapolis
Holt, Wm. Brayton.....	U. of Minn., M.B., 1923.....	Cleveland, Ohio
Kokatnur, Gundu R.....	U. of Minn., M.D., 1922.....	Baltic, Mich.
Levin, Bert G.....	U. of Minn., M.B., 1923.....	907 W. Franklin, Minneapolis
Madsen, Leo John.....	U. of Minn., M.B., 1923.....	2215 Lyndale Ave. N., Minneapolis
March, Kenneth Alan.....	U. of Minn., M.B., 1923.....	203 Buckingham Hotel, Minneapolis
Monroe, Paul Burns.....	U. of Ill., M.D., 1923.....	Soudan, Minn.
Morris, Francis Jos.....	Rush, M.D., 1923.....	Proctor, Minn.
Morrow, Jas. Jos.....	U. of Minn., M.B., 1923.....	Phys. & Surg. Bldg., Minneapolis
Olson, Ernest Alvin.....	U. of Minn., M.B., 1923.....	General Hospital, Minneapolis
Peterson, Marvin Garfield....	U. of Minn., M.B., 1923.....	General Hospital, Minneapolis
Rosenfield, Abraham Benj....	U. of Minn., M.B., 1923.....	General Hospital, Minneapolis
Scodel, Bension	Tufts, M.D., 1921.....	Lowry Bldg., St. Paul
Souster, Benj. Bruce.....	U. of Minn., M.B., 1923.....	Ancker Hospital, St. Paul
Stephens, Erwin Edward.....	U. of Minn., M.B., 1923.....	Garrison, N. D.
Stratte, Alf. Kenneth.....	U. of Minn., M.B., 1923.....	St. Francis Hospital, Pittsburgh, Pa.
Strunk, Clarence Alfred.....	U. of Minn., M.B., 1923.....	General Hospital, Minneapolis
Urbahns, Robert Durfee.....	U. of Minn., M.B., 1923.....	4416 Abbott Ave. S., Minneapolis
Weber, Mandel Leu.....	Moscow Univ., 1919.....	Nopeming, Minn.
Whitcomb, Elmer Wm.....	U. of Minn., M.B., 1923.....	University Hospital, Minneapolis
Williamson, Carl Sneed.....	U. of Pa., M.D., 1920.....	Rochester, Minn.
Wilmot, Harold Eugene.....	U. of Minn., M.B., 1923.....	St. Charles, Minn.
Wold, Alvin Pontus.....	U. of Minn., M.B., 1923.....	783 Fairmount, St. Paul
Zlatkovski, Michel Leibovich..	Kiev, Russia, 1913.....	917 East 5th St., Duluth

THROUGH RECIPROCITY

Becker, Samuel Wm.....	U. of Mich., M.D., 1921.....	Rochester, Minn.
Cobb, Donnell B.....	U. of Pa., M.D., 1921.....	Rochester, Minn.
Delamere, Granville Sinclair..	U. of Calif., M.D., 1921.....	Rochester, Minn.

Dixon, Claude Frank	U. of Kansas, M.D., 1921	Rochester, Minn.
Kilfoy, Edward Joseph	St. Louis U., M.D., 1922	Rochester, Minn.
Lyday, Russell Osborne	U. of Pa., M.D., 1920	Rochester, Minn.
Sturges, Chester Jas.	U. of Iowa, M.D., 1922	Buffalo, Minn.
Tuttle, Thos. D.	P. & S., N. Y., M.D., 1892	Aberdeen Hospital, St. Paul

PHYSICIANS LICENSED AT THE OCTOBER (1923) EXAMINATION TO PRACTICE MEDICINE
IN THE STATE OF MINNESOTA

BY EXAMINATION

<i>Name</i>	<i>School and Date of Graduation</i>	<i>Address</i>
Berdez, Georges Louis	Lausanne, 1914	St. Mary's Hospital, Duluth
Davidson, Thorald Edward	Rush, 4 yr. Cert. Med. 1923	Ancker Hosp., St. Paul, Minn.
Feeney, John Matthias	N. W. 4 yr. Cert. Med. 1923	Ancker Hosp., St. Paul, Minn.
Houck, Knut Hoegh	N. W., M.D., 1922	221 5th Ave. N. W., Rochester
Kjos, Clarence Eugene	Rush, 4 yr. Cert. Med. 1923	Ancker Hosp., St. Paul, Minn.
Rohwer, Christian Jacob	U. of Pa., M.D., 1921	Mayo Clinic, Rochester, Minn.
Spaulding, Olive G.	U. of Pa., M.D., 1921	Mayo Clinic, Rochester, Minn.
Tregilgas, Harold Richard	N. W., 4 yr. Cert. Med. 1923	Ancker Hosp., St. Paul, Minn.

THROUGH RECIPROCITY

Adams, Leon P.	Marquette, M.D., 1923	Rosemount, Minn.
Bargen, Jacob Arnold	Rush, M.D., 1922	Rochester, Minn.
Boysen, Herbert	U. of Ia., M.D., 1922	511 21st St., Sioux City, Ia.
Callahan, Francis Fowler	U. of Md., M.D., 1913	Pokegama, Minn.
Collins, Harry Aloysius	Creighton, M.D., 1922	Rochester, Minn.
Comfort, Mandred Whitset	U. of Tex., M.D., 1921	Rochester, Minn.
Cook, Jay Milton	Creighton, M.D., 1922	Staples, Minn.
Crane, Wm. Whitfield, Jr.	Stanford U., M.D., 1922	Rochester, Minn.
Davis, Austin Clifford	U. of Ia., M.D., 1916	201 9th Ave., Rochester, Minn.
Dorsey, Geo. Chas.	N. W., M.D., 1921	310 Hulet Block, Minneapolis
Espenlaub, Geo. Henry	Ind. U., M.D., 1922	Rochester, Minn.
Fossum, Cornelius	Loyola U., M.D., 1919	Moose Lake, Minn.
Huffman, Lester Dale	Ind. U., M.D., 1916	Rochester, Minn.
Keiser, Venice Duncan	U. of Ind., M.D., 1917	519 6th St. S. W., Rochester, Minn.
Leech, Chas. Hoyt	U. of Cin., M.D., 1922	825 5th Ave. S. E., Rochester, Minn.
Marquis, W. James	Harvard, M.D., 1922	Rochester, Minn.
Marsh, Fred Eugene	Vanderbilt, M.D., 1922	518 5th Ave. S. W., Rochester, Minn.
Mentzer, Stanley Herman	U. of Cal., M.D., 1923	Rochester, Minn.
Morse, Harry Dodge	McGill, M.D., 1918	Rochester, Minn.
Nixon, Samuel Henry	Med. Coll. Va., M.D., 1920	Rochester, Minn.
Offutt, Susan Rebecca	U. of Pittsburgh, M.D., 1919	Rochester, Minn.
Parson, Lester Raymond	Rush, M.D., 1922	Elbow Lake, Minn.
Raiter, Roy Ferdinand	N. W., M.D., 1923	Cloquet, Minn.
Stinson, John Wesley	Jefferson, M.D., 1921	Rochester, Minn.
Webber, Isaac Mervyn	Bowdoin, M.D., 1920	Rochester, Minn.
Yoakem, Howard Haynes	Ohio State U., M.D., 1921	Rochester, Minn.

NATIONAL BOARD CREDENTIALS

Bothe, Frederick Augustus	U. of Pa., M.D., 1921	Rochester, Minn.
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BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

INTERNATIONAL CLINICS. A quarterly of illustrated clinical lectures and especially prepared original articles by leading members of the medical profession throughout the world. Edited by Henry W. Cattell, A.M., M.D., Philadelphia, in collaboration with others. Volume III, 33rd series, 1923. Philadelphia and London: J. B. Lippincott Co.

BLOOD CHEMISTRY COLORIMETRIC METHODS. Willard J. Stone, M.D., Pasadena, Calif., attending physician Los Angeles General Hospital. Introduction by George Dock, M.D., Pasadena. 75 pages. New York: Paul B. Hoeber, Inc., 1923. Cloth, \$2.25.

DIAGNOSTIC METHODS. Herbert Thomas Brooks, A.B., M.D., F.A.C.P., Professor of Clinical Medicine, College of Medical Evangelists, Los Angeles; formerly Professor of Pathology, College of Medicine, University of Tennessee, Memphis, Tenn. 4th edition. 109 pages. 52 illustrations. St. Louis: C. V. Mosby Co., 1923. Cloth, \$1.75.

MENTAL DISORDERS. Francis M. Barnes, Jr., M.A., M.D., Associate professor of Nervous and Mental Diseases in the St. Louis University Medical School; neurologist to St. Mary's Hospital; consultant neurologist to St. John's Hospital; consultant psychiatrist to the St. Louis City Sanitarium; consultant neuropsychiatrist to the U. S. Veterans' Bureau, Ninth District, St. Louis. 2nd edition. 295 pages. St. Louis: C. V. Mosby Co., 1923. Cloth, \$3.75.

DISEASES OF THE SKIN. Richard L. Sutton, M.D., LL.D., Professor of Diseases of the Skin, University of Kansas, School of Medicine; former chairman of the Dermatological Section of the American Medical Association; Assistant Surgeon U. S. Navy, retired; dermatologist to the Christian Church Hospital. 1214 pages. 1069 illustrations. 11 colored plates. 5th edition, revised and enlarged. St. Louis: C. V. Mosby Co., 1923. Cloth, \$10.00.

THE NOTE BOOK OF AN ELECTRO-THERAPIST. By Mel. R. Waggoner, M.D. Published by McIntosh Electric Corporation, Chicago, Ill. Price \$5.00.

The first chapter deals with some of the principles of physics involved in the use of high frequency, sinusoidal, faradic and galvanic currents. Also a discussion of the principles of phoresis.

FOR SALE—South Central Minnesota—\$10,000 to \$15,000 unopposed medical and surgical practice. 100 miles from Minneapolis. Town of 600. Prosperous farming country. Fully equipped hospital. Good churches, high school. Modern office, equipped for eye, ear, nose and throat work as well as general work and x-ray. Collections 93 per cent. Nearest competition 15-18-25-30 miles. Scandinavian community. Open to single or married man. Thorough introduction. Complete details on request. Am moving to city. Address B70, care MINNESOTA MEDICINE.

Chapter II is on the different phases of electro-therapeutics with indications and contra-indications for use of same.

The remaining chapters are on treatment of individual diseases. Here the author describes his personal technique.

In order that physical remedies may be intelligently used, one must have good knowledge of the principles of physics, physiology, pathology and anatomy involved. The equipment must be of high grade or harm may be done. There is also a danger of becoming over-enthusiastic, since physical remedies like drugs are not cure-alls. Diathermia has already proven its value in increasing heat and blood supply to the part affected. Cataphoresis by galvanic currents is of somewhat doubtful value in deep tissues, since the ions travel slower than the blood stream and therefore are carried away before they can penetrate very deep. However, in superficial tissues, they may be used with some success.

A. M. LUNDHOLM, M.D.

A CLINICAL GUIDE TO BEDSIDE EXAMINATION.

Dr. H. Elias, Dr. N. Jazic, Dr. A. Luger; translated by William A. Brams, M.D. First edition. 124 pages, with a foreword by the authors. Rebman Company, New York. Cloth, \$1.50.

A small booklet which, in a systematic and logical sequence, endeavors to place before the physician methods of physical examination and the interpretation of the various findings. It is written in a very concise manner. Details of laboratory, graphic, or other methods not precisely clinical are all omitted, but references to them are given.

The chapters on lungs and heart are more intensively treated, although the findings here are those only of auscultation, percussion, palpation and inspection. Most welcome in these sections are the interpretations of cardiac and pulmonary phenomena, which are gone into much in the manner of an index, but still in a clear, concise and thoroughly understandable manner.

The relation of physical findings to prognosis is dealt with, but too little. One wishes for more of this sort of treatment.

The nomenclature is up to date and always exact. By an economy of words and concise classifications and explanations, the authors have succeeded in embodying in this small booklet an admirably practical guide to clinical diagnosis with much more real merit than is usually found in such books.

BURTON ROSENHOLTZ, M.D.

WOMAN, aged 38, desires position with physician or group. Five years' experience in physician's office as bookkeeper, stenographer, x-ray technician, and general office assistant, also some laboratory work. Fifteen years' business experience. References furnished. Address B74, care MINNESOTA MEDICINE.

YOUNG LADY with three years' experience in assisting and well experienced in general office work wishes position in doctor's office. Address B-73, care MINNESOTA MEDICINE.

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Minnesota State Medical Association

ANNUAL MEETING

October 10, 11 and 12, 1923

ST. PAUL, MINNESOTA

MINNESOTA STATE MEDICAL ASSOCIATION
MINUTES OF THE FIFTY-FIFTH ANNUAL
MEETING HELD IN ST. PAUL, OCTOBER
10, 11 AND 12, 1923

PROCEEDINGS OF THE HOUSE OF DELEGATES

FIRST SESSION—WEDNESDAY, OCTOBER 10, 1923

The House of Delegates met in the Windsor Room of the Saint Paul Hotel, and was called to order by the President, Dr. E. Starr Judd, Rochester, 2 P. M.

THE PRESIDENT: The House of Delegates will please come to order. I will appoint on the committee to pass on the credentials of the delegates, Dr. Cameron, Dr. Giffin and Dr. Carroll.

Members of the House of Delegates:

I am grateful and thank you for the honor you have conferred upon me in electing me to an executive office in this society, and I realize the responsibilities I have assumed.

The membership of the State Medical Association is made up of physicians who are licensed to practice medicine in the State of Minnesota. The members of the House of Delegates are chosen as representatives of the various county societies, to review the activities of the Association for the past year and to formulate plans and policies for the future. All of the county societies in the state should realize the responsibilities of this body, and see to it that they are well represented.

With routine business cared for and the reports of committees received and acted upon, it is our purpose to bring up for discussion any new ideas or activities in which we may take part for the benefit of the citizens of our state. In reviewing the work being done by a number of similar organizations in other states, I have found that one of the principal activities is the formation of health committees or leagues for the extension of medical knowledge and the development of better contact with the lay people of the state. In our own state, we have a Statewide Publicity Committee, formed to carry out similar work. This committee is, I believe, too large and unwieldy to be of service or to function properly in specific matters. We also have our Legislative Committee, which has done most excellent work, and which should be continued under its present chairman. In addition, a number of the county societies, through special organizations, are carrying out work along these lines.

Educational committees and health leagues have been formed in other states, apparently because it seemed impossible to get good legislation in other ways, and it seemed to be the duty of the profession of the state to keep its citizens informed on medical problems in order to counteract the activities of the charlatans. Everyone who has made a serious study of these problems seems to agree that it is

a matter of educating the general public in medical and public health problems, and that it is the duty of the profession, through the activities of its societies, to carry out such educational propaganda. Several plans were presented and discussed at a conference of state secretaries last year. In Michigan it was decided to establish a committee on public education, originated by the Michigan State Medical Association. The committee embraces in its membership representatives from the State Medical Association, the University of Michigan, including the Extension Department, its medical and hospital staffs, the State Department of Health, the State Dental Association, and the Detroit College of Medicine. Speakers are sent on request to any place in Michigan. The Extension Department of the University helps to pay the expense of these speakers. The committee has apparently just begun its work and it may be some time before the results of its activities are realized, but thus far, the members are very enthusiastic over what has been accomplished, both from the standpoint of publicity and the elevation of medical standards.

The second plan discussed at the conference of the secretaries, is in operation in Colorado and California, under the name of the Public Health League. This body acts as an intermediary between the Colorado State Medical Association and the public. The League is composed of lawyers, merchants, ministers, and physicians, the laymen being in the majority, and they are gradually becoming the most enthusiastic supporters of the movement. This league has functioned most satisfactorily for about one year.

The third plan was put into operation in Iowa, largely due to the activities of Dr. Macrae. There is a field activity committee, consisting of the president of the State Association, two members selected by the Council, one from the State Board of Health, one from the Faculty of Medicine of the University, one from the Iowa State Tuberculosis Association and one a state social worker. Thus the committee has seven members, five of whom are members of the State Medical Association. The problems undertaken are: (1) the distribution and delivery of medical service; (2) the adequate provision of good hospitals; (3) the establishment of county public health hospitals, and (4) the solution of health problems in schools. The Director of the Field Activities Committee devotes his whole time to the work. He has visited societies and clubs throughout the state, and up to the present time it is reported that he has discovered many matters of importance that need to be corrected. The expense of carrying on this work is great, and the activities of the committee have been limited by insufficient funds.

The fourth plan, a League for the Conservation of the Public Health of Idaho, is in operation in that state. The Secretary writes, "The League is somewhat different from the Medical Society in that it is larger in scope and handles problems that could not be touched by a medical society. In other words, the League takes care of the publicity, political and legislative end of the game, while the Society handles the scientific and ethical side." He feels

that the League has an advantage over a medical society since it may take part in all public health questions, and since the membership includes everyone interested in the betterment of public health, whereas the membership of a medical society is limited to medical men. As an illustration of the League's function, he cites the passage of the licensing law, concerning which there has been a misconception on the part of the public to the detriment of the medical profession. "Any public health law, and this includes the licensing law, is passed in the interest of the whole people; this has been held in hundreds of supreme court decisions. As a matter of fact, a law put through to benefit a certain profession or a class would be unconstitutional, and the supreme courts have held that all public health laws, while they have been fostered by medical men, are placed on the statute books for the benefit of the people. It is, therefore, one of our aims, to interest the people in matters of this kind." There have been over 900 court decisions pertaining to licensing matters handed down by our various supreme courts. A misconception has arisen that the profession is doing this for their own benefit. The secretary of this league believes that their great work in the future will be to start health columns in the daily, weekly, and monthly papers, in order to give the public the benefit of the knowledge acquired by the medical profession. Under conditions of such complete frankness, there will naturally be a better understanding between the public and the profession. Active membership in the Idaho League is limited to medical men, and the secretary feels that the control of the League should be kept in their hands. The regular members pay a definite membership fee, while the associate members pay any sum they desire.

In an endeavor to actively relate public health to the welfare of the state, Governor Smith, of New York, invited representatives of the medical profession from every section of his state to act as an advisory committee to the governor, this committee to investigate and report on rural health conditions and facilities, medical education, medical research, the Medical Practice Act, and narcotic drug problems. The action of Governor Smith in bringing into existence such a committee was endorsed by the House of Delegates of the American Medical Association.

We all recognize the necessity of a closer relationship between the public and our profession, and a consideration of the foregoing plans would seem to indicate that more can be accomplished by organization than by endeavoring to demonstrate to state legislators the importance of what we are trying to do in the interests of public health. While these various projects for the purpose of obtaining better contact between the state medical association and its component societies, between the state association and the national organization, and between all of these and the public, have not been in existence long enough to justify a definite prognosis with regard to results, they nevertheless suffice to encourage further effort along these lines, not only by a few of the medical profession, but by all.

In view of the work being done in other states, it seems to me that we should lose no time in appointing a committee from among the members of the Minnesota State Medical Association to study the plans of the various organizations now in existence, and later to originate such an organization as may seem best suited to corresponding work in our own state.

THE PRESIDENT: The next order of business is the reading of the minutes of the last meeting.

THE SECRETARY: The minutes of the previous meeting of the House of Delegates were published in the February number, 1923, of MINNESOTA MEDICINE. One correction should be made in the initial of Dr. Bratrud. It should be T. Bratrud; it was an error in publication. Possibly some of the members have found some other errors. If not, we could dispense with the reading of the minutes if a motion to that effect be made.

DR. W. A. JONES: I move that the minutes be accepted as published. (Motion duly seconded and carried.)

THE PRESIDENT: The next order of business is the report of the Council, by Dr. Workman.

DR. H. M. WORKMAN: Mr. President, Members of the House of Delegates:

REPORT OF THE COUNCIL TO THE HOUSE OF DELEGATES

The Council in full attendance met this morning at 10 A. M. in the University Room of the Saint Paul Hotel. The reports of the secretary, treasurer, and MINNESOTA MEDICINE were read and accepted. The report of the certified accountant, Mr. Flesher, who has audited all the books of the Association, was read and approved and the recommendation made that this report be published with the proceedings of the House of Delegates.

A resolution was passed congratulating the Editing and Publishing Committee, the Business Manager, and the Editor on the fine character of the publication and particularly its business management.

Further recommendation to the House of Delegates was made that attention be called to the provision in the by-laws that the attorneys of the State Medical Association must be given "sole power to conduct the defense" in the matter of malpractice suits. It is believed by the Council that the attention of members of the Association should be called to the situation as it now exists whereby Association attorneys are called upon to assist the attorneys of insurance companies where outside insurance is carried by a member.

The question of the formation of a scientific section of Obstetrics and Gynecology was referred to the House of Delegates for action.

(Signed) H. M. WORKMAN,
President.

THE PRESIDENT: I will call for the report of the Editing and Publishing Committee by Dr. R. E. Farr of Minneapolis.

REPORT OF THE EDITING AND PUBLISHING COMMITTEE

Minneapolis, Minn., Oct. 10, 1923.

Mr. President, Members of the Council and Delegates to the fifty-fifth convention of the Minnesota Medical Association:

I herewith submit the sixth annual report of the Editing and Publishing Committee of MINNESOTA MEDICINE for the year beginning October 8, 1922, and ending October 10, 1923.

As a preliminary to the submission of this report, I take pleasure in calling your attention to the fact that MINNESOTA MEDICINE is just finishing its most successful year since its foundation. While the list of non-member subscribers is not large, our publication seems to be finding favor with an increasing number of physicians outside of the state. That the number of subscriptions received from outside the state is not large is, in my opinion, due to the fact that no special effort has been made to obtain these subscriptions. It is our intention to establish in the near future a subscription campaign throughout the bordering states.

Your committee feels proud of the fact that a high editorial character has been maintained since the publication was launched and that the advertising appearing in our journal has been most carefully censored so that every member of the State Association may feel proud of the journal on this account.

The material offered to our journal has become so abundant that careful selection is possible and necessary, thereby giving us an opportunity to publish articles which rank with the best. It is perhaps for this reason that our journal has recently been mentioned along with two or three other publications by a distinguished editorial writer as an ex-

ample of the great advance that has taken place in the recent evolution of medical journals.

As the report of the Treasurer is carefully itemized, I shall only present the totals in this communication. The expense of printing MINNESOTA MEDICINE for the year amounted to \$10,352.08. Total receipts from MINNESOTA MEDICINE, including membership subscription credits, amount to \$11,798.17, giving a net surplus of approximately \$1,400.

I feel that this report would be incomplete without once more referring to the high editorial capacity of our Editor and Secretary, Dr. Carl B. Drake, whose untiring efforts and native ability have made the work of the Editing and Publishing Committee a pleasure rather than an arduous task.

And furthermore, I feel that a word of appreciation is due Mr. J. R. Bruce for the efficient management of our publication. His constant efforts at economy and his wise counsel regarding methods of increasing the income of the journal have been largely responsible for making it possible to present such a satisfactory financial report, all of which is respectfully submitted by

ROBERT EMMETT FARR,

Chairman of the Editing and Publishing Committee
of MINNESOTA MEDICINE.

THE PRESIDENT: What will you do with the report of this committee?

DR. F. R. WEISER: I move that it be accepted and placed on file. (The motion was duly seconded and carried.)

THE PRESIDENT: We will now have the secretary's report.

REPORT OF THE SECRETARY

One thousand eight hundred ninety-three physicians have been enrolled as members of the Minnesota State Medical Association since the last annual meeting. One thousand eight hundred eighty-nine of these are paid members and four have been received by transfer from other states. Nine members, who had paid dues for 1923, have died during the year, leaving a net active membership at the present time of 1,834, apportioned to the component societies as follows:

Aitkin County	6
Blue Earth County.....	30
Blue Earth Valley.....	27
Camp Release	43
Central Minn. District (1 deceased).....	6
Chisago-Pine	13
Clay-Becker (1 deceased).....	21
Dodge County	9
Freeborn County	15
Goodhue County	15
Hennepin County (3 deceased).....	451
Houston-Fillmore	23
Kandiyohi-Swift	18
Lyon-Lincoln	17
McLeod County	17
Mecker County	10
Mower County	22
Nicollet-Le Sueur	16
Olmsted County	232
Park Region	39
Ramsey County (2 deceased).....	298
Red River Valley (1 deceased).....	44
Redwood-Brown	31
Rice County	24
St. Louis County.....	172
Scott-Carver	18
Southwestern Minn.	49
Stearns-Benton	42
Steele County	16
Upper Mississippi	58
Wabasha County	13
Waseca County	12
Washington County	14

Watsonwan County	7
West Central	22
Winona County (1 deceased).....	21
Wright County	13

Total net membership (9 deceased).....	1,884
Grand total	1,893

Last year's report showed a total membership of 1,815 members, leaving a net gain, for the year, of 78. This is a smaller gain in membership than was recorded for 1922. This is accounted for, no doubt, by the fact that the number of physicians in the state not members of the society is growing less each year. Estimating that there are approximately 2,500 physicians in the state, we now have 76 per cent of this number as members of the society. It is doubtful whether any other state medical society can show a better record.

Notwithstanding the unusual expenditures for legal service during the year the society has made a net gain in cash receipts of \$1,569.31. During the year another real estate mortgage bond amounting to \$2,000.00 was purchased as an investment. This bond runs for three years at six per cent interest. The total net assets of the society at the close of the year, October 10, 1923, amount to \$14,320.27 and there are no liabilities.

The Secretary wishes to call attention to the following:

First—The county societies are the backbone of the organized profession. The county society, today, is suffering from the existence of too many medical meetings, notably those of the hospital staffs. County society meetings are showing a tendency towards becoming more political than scientific conferences. The remedy is a greater activity on the part of the officers of the county society, particularly in the arranging of interesting scientific programs.

Second—The number of malpractice suits has noticeably increased the past few years out of proportion to the increase in Association membership. The expense of the legal defense suits instituted against members has amounted this year to \$2,683.71, this being \$1,271.62 more than last year. Members are in the habit of calling on the Association attorneys for legal assistance even when they carry other insurance. This is like the patient demanding medical consultation as soon as he becomes ill. Representatives of insurance companies have stated that the employment of too many attorneys has the contrary effect to what is desired; that it arouses prejudice in the minds of the jurors by too great display of legal strength. It is suggested that the Association attorneys be called upon only on request of the attorney representing the insurance company or when the member has no other insurance.

Third—The Secretary's office frequently receives requests for assistance in suppressing illegal practitioners of medicine in the state. The State Association has no department for prosecuting illegal practitioners. The State Board of Medical Examiners, while having the right to institute proceedings, has not the personnel or means of prosecuting all offenders. Such proceedings may be instituted by individual physicians or by the local county society when proof of illegal practice is obtained. Proof in a specific case is the first essential and such proof should be referred to the local county attorney with the request that legal proceedings be instituted.

The system of handling the detail work of the Association through an executive secretary, which was initiated three years ago, has worked out very satisfactorily. The volume of the work has increased rapidly, due to the increased membership and the greater Association activities. The records are kept in a methodical and careful manner and the executive secretary, Mr. Bruce, and his assistants, Miss Seibert and Mrs. Hall, are to be commended for their interest and efficiency.

Respectfully submitted,

CARL B. DRAKE,
Secretary.

THE PRESIDENT: You have heard the secretary's report. Are there any comments or action to be taken on it? (Upon motion duly made, seconded and carried, the report was accepted.)

THE PRESIDENT: Is the Credentials Committee ready to report?

DR. CAMERON: I think there are a few delegates that came in that have not turned in their credentials.

THE PRESIDENT: While we are waiting we will have the report of the Treasurer.

REPORT OF THE TREASURER

DEBIT	
Cash on hand October 8th, 1922....	\$ 3,903.44
N. P. Bonds.....	4,000.00
Real Estate mortgage.....	2,700.00
Membership dues	9,575.00
Received account MINNESOTA MEDICINE	8,012.17
Received interest on bonds.....	160.00
Received interest mortgages	189.00
Received interest on daily bank balance	93.70
	<hr/>
	\$28,633.31
CREDIT	
Publication MINNESOTA MEDICINE....	\$10,352.08
Legal expense	2,683.71
Salaries	1,450.00
Convention expenses	728.32
Legislative committee	481.22
Council	170.02
Sundries (including postage, stationery, office supplies, circular letters, etc.)	595.21
Real estate mortgages, 6 per cent...	4,700.00
N. P. bonds.....	4,000.00
Money in bank, October 10th, 1923.	3,472.75
	<hr/>
	\$28,633.31

(Upon motion, duly made, seconded and carried, the report was accepted.)

THE PRESIDENT: Next I will call on Mr. Bruce, the Business Manager of the MINNESOTA MEDICINE, to report on the activities of MINNESOTA MEDICINE for the last year.

DR. J. R. BRUCE: Mr. President and Gentlemen: I have not very much to add to what Dr. Farr reported except the statement of the receipts and disbursements on account of MINNESOTA MEDICINE.

MINNESOTA MEDICINE

MINNESOTA MEDICINE has closed a very successful year notwithstanding the general business depression which has prevailed throughout the country and more particularly in our northwestern states. The general business condition has undoubtedly affected the volume of advertising receipts, although a fair volume has been maintained. This is a condition which has affected all classes of publications and advertising in general and is likely to continue to do so until business is on a more stable basis.

While the journal is able to show a very nice surplus for the year, it is certain that this could be very materially increased were the advertising rates advanced in proportion to the service which we feel that the journal renders. In the face of the conditions which have prevailed for the past two or three years, however, it has not been thought advisable to make a change.

REPORT FOR THE YEAR

MINNESOTA MEDICINE RECEIPTS

Money remitted for subscriptions from October 14, 1922, to October 10, 1923.....	\$ 330.75
Money remitted for advertising.....	7,681.42
Subscription credit—1,893 members at \$2.00....	3,786.00

27 members in arrears at \$2.00.....	54.00
Accounts receivable, advertising, October 10, 1923	1,861.52
Total	<hr/>
	\$13,713.69

MINNESOTA MEDICINE DISBURSEMENTS

Printing expense	\$ 4,136.00
Paper stock	1,271.55
Bruce Publishing Company, commission on advertising for twelve months.....	1,682.44
(The Bruce Publishing Company is allowed a commission of 30 per cent on all advertising obtained direct and 5 per cent on all advertising obtained through the Co-operative Medical Advertising Bureau.)	
Special stenographic fee.....	535.00
Actual postage for mailing of magazines, telephone, telegrams, etc.....	311.00
Envelopes for mailing.....	142.67
Editorial expense, including editor's salary, newspaper clippings and illustrations.....	2,258.52
Miscellaneous	44.90
Accounts receivable, October 5, 1922.....	1,920.69
Total	<hr/>
	\$12,272.77
Net gain for the year.....	\$ 1,440.92

J. R. BRUCE,
Business Manager.

THE PRESIDENT: You have heard the report of the activities of MINNESOTA MEDICINE the last year. All in favor of accepting it say aye. Contrary. The report is accepted.

The report of the attorneys will be read by Dr. Drake.

ANNUAL REPORT OF ATTORNEYS

October 5, 1923.

Dear Dr. Drake:

You have requested it, and we make report to the Association covering the work done by us during the year last past.

Hanson as Admr. v. Schlutz, et al. This action is pending in Hennepin County and is brought against Dr. Frederick W. Schlutz and Dr. F. H. Poppe and the Asbury Hospital to recover damages on account of the death of Lillian Hanson, a child, following an operation for pleural empyema.

Preston v. Schneider. The alleged malpractice in this case is an x-ray burn of the abdominal wall in the course of treatment of fibroids of the womb. There has been dismissal of the case on the merits and nothing was paid by the defendant.

Brewster v. Beals. The alleged malpractice in this case is in the reduction of a serious fracture (Colles) of the wrist and hand. The action has been disposed of on the merits and nothing was paid by Dr. Beals.

Flynn v. O'Hara. The charge of malpractice in this case is in producing lacerations with resulting infection in the treatment of Manda Flynn in childbirth. There was a verdict in favor of Manda Flynn in the sum of \$1,600 and this verdict is being reviewed on a motion for a new trial. It is morally certain the verdict will be set aside by the court as not sustained by the evidence.

Backlund v. Frank E. Burch and Charles E. Connor. The alleged malpractice in this case is in severing the facial nerve or its branches resulting in facial paralysis in mastoiditis. The action is still pending and undisposed of.

Godiland v. Stewart. The alleged malpractice in this case is in advising and permitting the administration of chloroform in the extracting of teeth, the condition of the patient being such that only nitrous oxide could be administered, resulting in the death of the patient. Two cases are pending, one covering the death case, and the other the loss to the husband, and expenses.

Martinson v. Dr. Egil Boeckmann. Action in the District Court of Ramsey County. The claimed malpractice con-

sists in leaving within the lung cavity gauze and a safety pin and in failing to remove it, all resulting in the death of the patient. Counsel for the plaintiff has notified us that he will dismiss the case as to Dr. Boeckmann, leaving it pending against the Saint Paul Hospital.

Bahr v. Withrow. This action is pending in Koochiching County. The claimed negligence is in applying too tight a bandage in reducing a fracture of the elbow joint of a child. Besides ankylosis and deformity of the arm, the child suffered general infection of the arm. The arm is totally disabled. There was a verdict of \$1,500, which is being reviewed on a motion for a new trial. The court has not given decision on the motion for a new trial.

Lampton v. Thornby. Action brought in the District Court of Clay County. The claimed negligence was in improperly reducing a Colles fracture. The court directed a dismissal on the merits.

Eastlund v. Cooney. Action brought in the District Court of Mille Lacs County. The claimed negligence consists in x-ray burns in fluoroscopic examination to determine the condition of the stomach. The court directed a verdict in favor of Dr. Cooney.

De Bernardini v. Dr. Vercellini and Geist. Action pending in District Court of Ramsey County. The claimed malpractice consists in improperly performing an abortion, resulting in profuse hemorrhages and general debility. Dr. Vercellini was merely the family physician and recommended the operation after consultation with Dr. Rothrock. The action will likely be dismissed as to Dr. Vercellini and stand for trial as to Dr. Geist.

Korman v. Hagen. Action pending in Waseca County. It is claimed that Dr. Hagen negligently fractured the child's arm in confining the mother. The action will be for trial in about two weeks.

Elofson v. Adkins. Action pending in the Federal Court at Fergus Falls. The claimed malpractice consists in the improper application of a cast on the leg and in not removing it, causing infection and gangrene, requiring amputation of the leg. The action will be for trial in November.

Walrath v. Hammermeister. The alleged malpractice in this case is in injecting ether into the leg of the patient, thereby causing injury to the sciatic nerve, leaving the patient in a crippled and paralyzed condition. The patient was suffering from pains in the leg. There is also a companion suit brought by the husband. The actions are still pending.

Krueger v. Bossingham. This action is still pending and is brought by the husband to recover certain expenses consequent upon the alleged malpractice in the treatment of his wife, who died from septicemia arising out of childbirth.

Singer v. Bossingham. This case is still pending, and the alleged malpractice is in failing to remove the afterbirth and in introducing a septic condition which resulted in focal infection with a crippled condition of the arm. We won the case on a trial thereof, but a new trial has been ordered.

Farr v. Burns and Folken. The claimed malpractice in this case is in failing to reduce a fracture of the neck of the femur. The action has been dismissed on the merits and nothing paid by the defendants.

Widman v. Lewis. The claimed malpractice in this case is in failing to discover and reduce fractures of the vertebrae. On the trial of the case the same was dismissed on the merits. Nothing paid by the defendant.

Rosenkranz v. Hengstler. It is claimed in this case that Dr. Hengstler negligently caused the death of Rosenkranz, his patient, by failing to surround the patient with proper sanitary conditions. The case was dismissed on the merits and nothing paid by Dr. Hengstler.

Johnson v. Cosgrove. The alleged negligence in this case is an x-ray burn in a fluoroscopic examination to determine the existence of ulcers of the stomach. The case has been dismissed on the merits and nothing paid by the defendant.

John v. Shipley (2 cases). Actions in the District Court of Mower County. The claimed malpractice is in intro-

ducing into the eye, eyeball and membranes some acid or foreign substance which severely burned the eyeball and membranes and impaired the sight. The actions will be for trial this month.

Johnson v. Urstad. Action pending in District Court of Hennepin County. The claimed malpractice is the failure of Dr. Urstad to perform an operation to relieve against pleural empyema. Counsel for Johnson has notified us that he will dismiss the case.

Marka v. Mankato Clinic. Action pending in the District Court of Blue Earth County. The claimed malpractice is in treating the patient for sciatic rheumatism and in negligently failing to diagnose that the patient suffered from osteomyelitis or arthritis of the left hip joint and thigh. Action will be for trial in November.

Costenoble v. Tanner. Action pending in the District Court of Hennepin County. The claimed malpractice consists in failing to diagnose diphtheria, from which the patient died.

Doran v. Mankato Clinic. Action in the District Court of Blue Earth County. The claimed malpractice is improper administration of an anesthetic and the patient died while under such influence. The case has been dismissed.

Hawkes v. Andrews. The claimed negligence is in leaving a sponge in the abdominal cavity in an operation for appendicitis.

In addition to the foregoing, there are some claims pending with threatened lawsuits.

Very truly yours,

OPPENHEIMER, PETERSON, DICKSON & HODGSON,
By Geo. W. Peterson.

THE PRESIDENT: The Credentials Committee report.

DR. J. A. CAMERON: Out of a possible fifty-seven we have forty-two credentials turned in. Before the meeting is over we will try to collect some more, if there are any.

The Committee on Credentials reported that 42 delegates had registered and were entitled to seats in the House of Delegates.

On motion, the report was accepted.

The following delegates constituted the House:

SOCIETY

DELEGATES

Blue Earth County.....	Dr. H. J. Lloyd, Mankato
Camp Release Dist.....	Dr. E. M. Clay, Renville
Central Minn. Dist.....	Dr. H. C. Cooney, Princeton
Chisago-Pine	Dr. Carlton G. Kelsey, Hinckley
Goodhue County	Dr. H. T. McGuigan, Red Wing
Hennepin County	Dr. A. S. Hamilton, Minneapolis
	Dr. L. A. Nippert, Minneapolis
	Dr. F. L. Adair, Minneapolis
	Dr. Kenneth Phelps, Minneapolis
	Dr. J. C. Litzenberg, Minneapolis
	Dr. Geo. D. Head, Minneapolis
	Dr. J. F. Corbett, Minneapolis
	Dr. W. A. Jones, Minneapolis
Houston-Fillmore	Dr. Cyrus B. Eby, Spring Valley
Kandiyohi-Swift	Dr. C. L. Scofield, Benson
McLeod County	Dr. J. B. Claire, Winsted
Mower County	Dr. R. S. Mitchell, Grand Meadow
Nicollet-Le Sueur	Dr. H. B. Aitkens, LeSueur Center
Olmsted County	Dr. D. F. Hallenbeck, Rochester
	Dr. H. Z. Giffin, Rochester
	Dr. A. H. Logan, Rochester
	Dr. W. A. Plummer, Rochester
	Dr. V. C. Hunt, Rochester
Park Region	Dr. A. C. Baker, Fergus Falls
Ramsey County	Dr. O. W. Holcomb, St. Paul
	Dr. W. C. Carroll, St. Paul

	Dr. C. C. Chatterton, St. Paul
	Dr. E. C. Eshelby, St. Paul
	Dr. L. A. Hilger, St. Paul
	Dr. J. A. Cameron, St. Paul
Red River Valley.....	Dr. P. F. Melby, Thief River Falls
Rice County	Dr. W. H. Theissen, Faribault
St. Louis County.....	Dr. C. L. Hancy, Duluth
	Dr. W. A. Coventry, Duluth
	Dr. O. W. Parker, Ely
Scott-Carver	Dr. H. W. Reiter, Shakopee
S. W. Minnesota.....	Dr. F. W. Metcalf, Fulda
Stearns-Benton	Dr. W. L. Beebe, St. Cloud
Wabasha County	Dr. D. S. Fleischhauer, Wabasha
Washington County	Dr. J. W. Stuhr, Stillwater
West Central	Dr. C. F. Ewing, Wheaton
Wright County	Dr. L. Harriman, Howard Lake

THE PRESIDENT: What shall we do with the Attorneys' report? (Upon motion the report was accepted.)

THE PRESIDENT: Report of the American Medical Association Delegates, Dr. Bell of Minneapolis.

REPORT OF A. M. A. DELEGATES

The seventy-fourth Annual Session of the A. M. A. was held at San Francisco June 25th to 29th, 1923.

The House of Delegates met in the Civic Auditorium, June 25th, at 10 A. M., and was called to order by the speaker, Dr. F. C. Warnshuis. Full and complete stenographic reports of the meeting are given in the journal issues of June 30th, July 7th and 14th, 1923. Minnesota, in addition to its two delegates from this body, was represented by Dr. L. G. Rowntree, Delegate from the section of Pharmacology and Therapeutics, and Dr. W. F. Braasch, section of Urology. Speaker Warnshuis directed the deliberations of the House of Delegates in a manner tending to minimize friction and accelerate business. (The minutes of the last session were approved.)

The vice-speaker, Dr. Rock Sleyster, was called to the chair, after which Speaker Warnshuis delivered his address. He first called attention to the great loss sustained by the Association in the death of Dr. A. R. Craig, who had served the organization as its secretary for twelve years. Dr. Craig literally gave his life in unselfish labor to the Association. The speaker appointed a special committee to formulate suitable resolutions to be spread upon the records of the Association. The speaker called attention to the necessity of the House of Delegates devoting more time to the consideration of the business of the Association, and advised a midyear meeting; also advised the appointment of Reference Committees in advance of the annual meeting. Owing to the great expense attached to a mid-year meeting, the House of Delegates did not approve the suggestion, but approved the suggestion that reference committees be appointed in advance of the annual meeting. The House approved the suggestion of the speaker that there was no demand or excuse for the entrance or continued activity of the Red Cross organization in the field of public health work, and recommended that the Board of Trustees so inform the officials of the Red Cross organization.

President de Schweinitz directed attention to the vexed problem of the undergraduate curriculum, especially the time which should be allotted the manifold specialties, and suggested that a special committee of the Council on Medical Education and Hospitals be appointed by the House to carefully investigate the entire subject.

President-elect Wilbur called attention to the necessity of the Association having a well-thought-out policy, one looking ahead at least a few years,—a most timely suggestion for our Association. He also called attention to the necessity of periodic physical examinations, in order that individuals may know their physical condition. This would

afford an opportunity for the profession to bring directly home to the laity the benefit of scientific medicine.

Secretary Olin West reported the membership of the Association 88,519, a decrease of 529 members during the year, due largely to correcting the roster. The 2,049 component societies forming the various state societies represented 2,400 counties. The secretary reported a gain of 422 in the number of enrolled Fellows during the year, with 53,444 names on the roster May 1st, 1923. Some confusion apparently exists with respect to membership and fellowship. All members of State Associations are members of the A. M. A., but members desiring to become Fellows must make application, must subscribe for the journal, and pay dues for the current year. The dues and journal subscription amount at present to \$6.00. Only Fellows are eligible for participation in the work of the Scientific Assembly, for election as delegates, or as officers of the Association. The Trustees reported an actual decrease in the circulation of the journal, due in part to the increased subscription price of \$6.00.

Hygeia. The Minnesota State Medical Association, having urged the publication of a lay journal for several years, will be disappointed with the meager circulation to date. On the first day of May there were 19,500 subscribers, the vast majority being physicians who accepted the special offer made members of the profession.

The Trustees called the attention of the House of Delegates to a communication from Dr. Chas. E. Sawyer, requesting the appointment of an active committee to represent the Association at further conferences on the question of a National Welfare Department. In view of the fact that a Special Committee was appointed at the Boston meeting in 1921, the House instructed the speaker to appoint such additional members as he deemed advisable, preferably members residing near Washington. At the last Annual Meeting the Trustees were authorized to establish a Central Bureau of Legal Medicine and Legislation; this was done, and Dr. W. C. Woodward was placed in charge. This Bureau will doubtless enable the profession to keep more directly in touch with legislation, national and state. The Trustees requested that the Council on Health and Public Instruction be abolished, and that they be authorized to establish in lieu thereof a Bureau of Health and Public Instruction. Approved by the House.

The treasurer's report showed a reserve fund of \$322,186.08, Dec. 31st, 1922.

The authors of both amendments to the constitution, proposed at the last annual session, seeking to restrict the powers of section delegates, requested the privilege of withdrawing same, which was promptly granted by the House of Delegates. For this fortunate outcome, Delegates Rowntree and Braasch deserve much credit.

The Judicial Council, in its report, called attention to the fact that the Board of Control of any hospital, not maintained by general taxation, has the legal right to refuse the privileges of the hospital at any time to any practitioner, regardless of his school of practice, also that the staff has the right to refuse as an associate any person it may consider objectionable.

Council on Health and Public Instruction called attention to the advisability of suitable blanks for the examination of persons supposedly in good health, and that county societies announce that their members are prepared to conduct such examinations.

The report of the Council on Medical Education and Hospitals dealt with: 1st. The progress during the year in medical education. 2nd. The problems in medical practice. 3rd. Graduate and postgraduate medical schools. 4th. Nurse education and service. The Council reported 81 medical schools, with a total enrollment of 16,140 students. The medical curriculum still continues to be an unsolved problem, and doubtless will so continue. However, the closer correlation between laboratory and clinical teaching is a decided gain. The Council expressed the opinion that 85 per cent of all cases of illness can be properly cared for by the qualified general practitioner, and 90 per cent of all

patients can be cared for in their homes. The Council estimated the number of Groups at 270—31 in Minnesota, and expressed the opinion, shared by the majority of the delegates, that Group medicine, properly organized, and ethically conducted, had a place in the field of medicine.

The House approved the recommendation of the Council that the list of approved Graduate Medical Schools be published. The Council devoted considerable time to the problem of the education and training of the nurse, and recommended that the question be referred to a joint committee of physicians and nurses. Approved by the House.

The Special Committee, appointed at the last annual session, to consider the suggestion of ex-President Hubert Work, urging the division of our membership into districts, reported adversely. Recommendation of Committee approved by the House.

The following resolution introduced by Dr. T. C. Chalmers, amended by the Reference Committee on Rules and Orders, was approved by the House:

Whereas, the honor and integrity of the Medical Profession is being reflected on by unnecessary, unprofessional, and unlawful prescribing of alcoholic liquors, by some unscrupulous physicians,

Resolved, That in the judgment of the House of Delegates, of the American Medical Association, all State and County Medical Associations should use their best endeavor to discipline physicians who either negligently or wilfully prescribe alcoholic liquors, otherwise than in accordance with the law, and to purge the profession of physicians who, wilfully, under the cloak of their profession, prescribe alcoholic liquors for other than medicinal purposes; and

Resolved, That the secretary forward a copy of this resolution to every State and County Medical Association affiliated with the A. M. A.

Dr. F. H. Martin was extended the privileges of the floor to explain the reorganization of the Gorgas Memorial Committee, and methods proposed to obtain subscriptions. Briefly, it is proposed to raise the sum of five million dollars, which is to be invested in trust securities, the interest to be used to construct and maintain the Gorgas Memorial Institute of Tropical and Preventive Medicine, to be located in the city of Panama. The House, by a rising vote, pledged the A. M. A. to do everything in its power to assist the Committee.

The election of officers resulted in the selection of Dr. William Allen Pusey as President, Dr. Olin West, Chicago, as Secretary, and Dr. Frederick Warnshuis, Michigan, as Speaker.

Chicago was chosen as the meeting place for the 1924 Annual Session.

JOHN W. BELL.

THE PRESIDENT: The Association is greatly indebted to Dr. Bell for this detailed and very carefully prepared report. Will you take action on the report? (Upon motion duly made, seconded and carried, the report was adopted.)

THE PRESIDENT: I will now call for the report of the Member of National Executive Council, Dr. H. P. Ritchie, St. Paul.

DR. H. P. RITCHIE: I do not quite understand why that is called the National Executive Council. It is possible I have been attending for the last four years the wrong organization or the wrong meeting. In talking with Dr. McDavitt, he says there is no such organization. What I attended was the Annual Congress on Medical Education, etc.

The Annual Congress on Medical Education, Medical Licensure, Public Health and Hospitals, met March 5th, 6th and 7th, 1923, at the Congress Hotel in Chicago and fully reported in journals of the A. M. A. immediately following those dates. This is my fourth report. My first report was a long one full of enthusiastic comments upon the wonderful personnel of the speakers including the high-

est type of man interested in the form and methods of teaching, representing the ideals of our profession, lending their best efforts of thought and action to the elevation of standards and selection of means for their accomplishment.

During these four years there has been no let-down in the level of excellence. These meetings are open to anyone of the profession and attendance must result in profit, if only to bring intimately to your attention the best problems involved, not only of teaching, but of diplomacy and policy.

In the department of Education it is significant that most of the papers were from Committees of Investigation, on Graduate Medical Schools, Medical Curriculum, Nursing Education, etc.

This can be interpreted as meaning that the sterling work of this committee undertaken years ago under the chairmanship of Dr. Bevan has resulted in practical standardization of school and the course is now a follow-up and check and review, rather than the presentations of new policies.

A new feature in this work has developed, however, in the physical and equipment side of teaching.

The Present Ideals of the Physical Plant in Medical Education was given by Dr. Chas. R. Bardeen of Wisconsin Medical School and Dr. G. Canby Robinson of Vanderbilt at Nashville. They discussed arrangement of buildings, association of departments, relation of the elementary subjects and clinical teachings.

They reviewed these problems as shown by a number of schools and concluded that there were only two schools on the right track, Pennsylvania and Minnesota. And it may have been my pride and personal interest, in reviewing the photographs of their demonstration, that the report on Minnesota, if not the best at this time, showed the best prospect of the future.

One more thing only will be mentioned is a morning session on the subject, "Organization of the Public for Co-operation With the Medical Profession." Dr. Vaughan gave the Plans and Prospects of Hygeia. President Owen, of the National Education Association, made a most stirring talk upon the relations of the medical profession and the schools, involving our interests and advice in the direction of proper instruction and control in these fields.

He mentioned also the vast numbers of women's clubs anxious for our interest, willing to respond in effort and support to any program we may sponsor, and all we have to do is take the invitation.

These proposals and evidence should be taken and considered most carefully not only in our state but also county societies, as they indicate that public health or just health instruction and interest in public affairs, either personally or in groups or in formal organizations is becoming imperative if the profession is to combat the propaganda of spurious treatments and cures which now are, if not really, at least are apparently, in the ascendancy.

HARRY P. RITCHIE.

THE PRESIDENT: Will you act on the report of this committee?

DR. H. M. WORKMAN: I move its acceptance and that it be placed on file. (Motion was duly seconded and carried.)

THE PRESIDENT: Committee on Public Policy and Legislation, by Dr. F. J. Savage.

REPORT BY COMMITTEE ON PUBLIC POLICY AND LEGISLATION

October, 1923

One year ago your committee was voted an allowance of \$500.00. During the session of the legislature the council allowed us an additional \$200.00. We spent \$481.51, so that the additional \$200.00 was not used. This money was spent for stenographers, stationery, stamps, mimeographing and telegrams. Some legal advice was obtained from the Association Attorneys without charge.

The Basic Medical Practice Act aroused such a storm

of protest from optometrists all over the state that it seemed wise to modify the bill to make the examination for optometrists to cover the anatomy, physiology and pathology of the eye only, and to drop the subject of chemistry. This was done two days before the public hearing in the House and converted the optometrists from enemies into allies. They are evidently trying to raise their standards and see the need of broader education and this trend should be encouraged.

We could not learn from the State Dental Society what their wishes were but the dentists remained passive under the promise that if the bill were recommended by the House committee it would be modified as they desired, before being acted upon by the Senate committee.

There is still an unreasonable gulf between the professions of Medicine and Dentistry. Some plan of closer cooperation between our respective state societies should be worked out, so that vital matters, such as legislation, could be agreed upon well in advance.

The county medical and dental societies could well hold occasional meetings together, and even the state societies, if they met at or about the same time, could well exchange material of mutual benefit. For it must be said that dentistry, in any of its branches, except the purely mechanical, is quite as much related to general medicine as are some of our own specialties.

There is a good deal of feeling on the part of the dental profession against the medical profession on account of the existing gulf. A large portion of the dental profession with whom we had the opportunity to come in contact feels that the dental profession should stand by itself independently of medicine and is in opposition to a move which they believe to be in existence to make dentistry a branch of medicine and too largely under the control of medical men. They are more or less fearful that our proposed new law would add another year to the course in dentistry.

When we offered to exempt them from the provisions of our Basic Medical Practice Act they were insulted because that inferred they were not practicing the art of healing. When we agreed that they should come in under its provisions they could not see why their examination should cover the anatomy, physiology and pathology of the entire human body. We therefore modified the bill to make their examination cover the anatomy, physiology and pathology of the face, head and neck.

An additional cause of resentment on their part was that they were not consulted when the original bill was drafted.

The osteopaths did not oppose the bill. It was defeated by chiropractic opposition and killed in the House committee by a vote of 12-2. An attempt was made to revive it in the house and this mustered but 27 votes for it.

The osteopathic bill was passed by a small majority in the Senate after an apparent defeat, and by a 2-1 vote in the House. The two paragraphs which follow give the gist of the new features of the law.

"Osteopathic physicians, when duly licensed, shall have the same rights and power and shall be subject to the same duties as other physicians with reference to matters pertaining to the public health; including the reporting of births and deaths. Osteopathic physicians, when duly licensed, shall have the right to practice osteopathy, as taught in reputable schools of osteopathy, including the use and administration in connection with the practice of obstetrics, minor surgery and toxicology only of anesthetics, narcotics, antidotes and antiseptics, subject, however to the same state and federal restrictions and limitations as are by law applicable to physicians and surgeons licensed to practice medicine and surgery."

"Except as hereinafter expressly authorized as to the administration of anesthetics, narcotics, antidotes and the use of antiseptics, the license shall not authorize the holder to give or prescribe drugs for internal use or perform major surgery."

There were two chiropractic bills introduced. The first making the necessary course of study in Minnesota 4,100

30-minute hours, equivalent to 2,460 50-minute hours and possible of completion in 10 months. The second making the course of study 4 years of 9 months each. Both bills were recommended to pass by the House Committee on Public Health.

Your committee supported a bill introduced by the mass-seurs, providing for a nine months course of instruction prior to taking an examination before a board. This bill was introduced too late in the session for passage.

The original nurses' bill was so torn to pieces as to be scarcely recognizable. The clause in the original bill making the trained nurse of the future complete a high school course as a preliminary to the study of nursing, caused bitter opposition from the medical men of the state representing the small country hospitals. These small hospitals found in this higher qualification, not only immediate difficulties in securing nursing materials, but greatly increased expense in maintaining a teaching force drawn largely from the registered nurses, graduates of the larger hospitals.

By the law finally enacted, their preliminary education must qualify them for high school entrance. Mention of the so-called practical nurse is entirely left out in the law.

Your committee endorsed the original bill and they wish to acknowledge an error of judgment in so doing, without first getting a larger expression of opinion from physicians throughout the state.

Your committee feels very keenly the fact that the medical man's opinion on medical matters as regards public health, as reflected by the legislative mind, counts for but little. This condition is deplorable and may be changed by years of effort. Among the factors in this viewpoint of the public may be mentioned the following:

We are at the present day getting the hostility which is so often directed by certain elements in society against orthodoxy. Many people clash with it whenever they observe it or witness its supposed strength.

Our professional cohesion is reflected chiefly in keeping our membership straight ethically, making it harder and harder for our own members to qualify (higher educational standards and longer course of study), and in a restriction of our own work whenever and wherever we may possibly bring it about by improved sanitation and public health.

We should strive for an enlightened educated public opinion to cover the entire country, emanating from the headquarters of the A. M. A. by means of the public press, the radio and the movies. Those who most need education to make them think right along medical lines are not going to subscribe to *Hygeia* and the *Northwestern Health Journal*. These publications are excellent, but their field is too small and these other agencies will reach thousands rather than tens.

It is quite evident that our medical men lack a general interest in civic affairs. If our demands for a broad type of preliminary education before going into medicine have any meaning as well as value, it should be reflected by a more consistent and intelligent civic outlook than we usually see.

This same feature is evident in the type of interest our membership is apt to show in politics: we find too many of our members willing to dabble in a small, pusillanimous type of local or ward "healing," but in no sense to take a substantial interest in the broader purpose of government, and we are conspicuously absent, for most part, from our public assemblies. There is a decided tendency to allow the control of many public health enterprises to drift into the hands of laymen. We must remember that one of our greatest means of demonstrating to the public the need of our long and expensive professional training, lies in the return we expect to make to the body politic by our intelligent direction of matters concerning individual and public health.

We are held up to personal ridicule by the peculiarities and shortcomings of our own membership in many ways, but conspicuously we should emphasize the following:

(a) Blatant and habitual abortionists, possessing medical degrees, disgrace us before the whole world: in every

community where these exist they should be forthwith put behind the bars.

(b) Some of our members charge fees far out of proportion to that which people can or should pay, and the whole profession suffers thereby.

(c) Expert testimony as now presented in our courts is a severe public test of our integrity, and reflects disastrously. Only by a mechanism which will remove the temptation to modify testimony for gain, and make the expert an officer or employe of the court instead of the litigants, will it be possible in the opinion of your committee to do away with the many and serious evils of present-day medical testimony.

(d) The booze-peddling doctor who sells his quota of prescriptions either to tipplers or bootleggers.

(e) The passing of the family physician, leading to the treatment of cases rather than patients.

(f) The rise of the cults. The osteopaths and chiropractors in Minnesota today number 500 to about 2,200 medical men.

Your committee recommends that the Secretary of the Society express by letter our appreciation of the consistent backing of the medical profession and our thanks for their efforts to the following men:

Senator Sherman W. Childs of Minneapolis.
 Senator J. D. Denegre of St. Paul.
 Representative Albin S. Pearson of St. Paul.
 Representative John E. Stevens of Minneapolis.
 Representative A. B. Cole of Fergus Falls.
 Representative S. B. Shonyo of Elgin.
 Mr. Pierson and Dr. A. J. Chesley of the State Board of Health.

We recommend that the component county societies permanently retain committees on legislation.

F. J. SAVAGE
 E. L. TUOHY
 S. MARX WHITE

THE PRESIDENT: You have heard the report of the Legislative Committee; what action do you wish to take on it? (On motion the report was accepted.)

THE PRESIDENT: The report of the Committee on Social Insurance by Dr. W. A. Coventry.

DR. W. A. COVENTRY: The Committee on Social Insurance has nothing to report. Nothing came before the committee and there was nothing that demanded any action.

THE PRESIDENT: We will now have the report of the Committee on the Gorgas Memorial Fund, Dr. Thos. H. McDavitt of St. Paul.

DR. THOS. H. MCDAVITT: The Gorgas Memorial, as you know, was started first by the American Medical Association to form some sort of memorial for Dr. Gorgas. It soon became evident to the Board of Trustees of the American Medical Association that it was absolutely essential that some other method of management be adopted rather than to send it around through the state associations and getting up subscriptions that would come in the way that subscriptions usually do come in. In other words, that Dr. Gorgas was a larger man than just being a doctor. He was an international man and all of the organizations, medical and civic, almost in the entire world, were desirous of taking some sort of action in reference to a memorial for Dr. Gorgas. It soon became evident that a mere memorial such as is carried out ordinarily in the way of a monument or something of that kind was not a sufficient acknowledgment of such a large man.

While some of the state organizations have sent in subscriptions, the Board of Trustees, knowing that this was

going to assume a larger place in national and international affairs than that of our own organization, returned all of these subscriptions. They called in experts to find out what would be the best manner and method of getting a memorial that would be sufficient to the cause. They called in Dr. Franklin H. Martin and several other specialists, and Dr. Martin, having made such a grand success with the College of Surgeons, took this matter under special charge. A corporation was formed under the laws of the state of Delaware, and I will read you a part of the report, which is sufficient as a report of our Gorgas Memorial Committee.

1. The Gorgas Memorial was organized under the laws of the state of Delaware with Admiral Braisted, Hon. John Bassett Moore, Surgeon General Ireland, Surgeon General Stitt, Surgeon General Cumming, Dr. Leo S. Rowe, Hon. Jose E. Lefevre of the Panaman Legation, President Belisario Porras of Panama, and Dr. Franklin Martin as the sponsors.

2. The object of the organization is to raise money, the interest of which will sustain a working memorial to General Gorgas, whose genius stamped out yellow fever and malaria in Cuba and Panama, and who taught us how to control those diseases.

3. The memorial is to be known as the Gorgas Memorial Institute of Tropical and Preventive Medicine, and will take the form of a research laboratory and a teaching institute in Panama for those branches of medicine.

4. The headquarters of this institute will be presided over by a board of scientific directors, of which Prof. Richard P. Strong, of Harvard University, has been selected as the first director. The institute will be located in Panama on a beautiful site on the shore of the Pacific, which was formerly in the exposition grounds of the city of Panama, and the site was donated by the Republic of Panama, and President Porras, backed by the citizens of Panama, has guaranteed the initial buildings.

5. It is the plan of the directors of the institute to raise the sum of five million dollars, which will be invested in trust securities, and only the interest of which is to be used to carry on the purposes of the organization.

6. The board of directors is composed of the following named men:

Honorary President, Warren G. Harding, President of the United States.

Dr. Belisario Porras, President, Republic of Panama.
 Surgeon General Merritte W. Ireland, United States Army, Washington.

Surgeon General Hugh S. Cumming, United States Public Health Association.

Dr. Seale Harris, President, Southern Medical Association.

Mr. Bernard Baruch, New York.

Mr. W. P. C. Harding, President, Federal Reserve Bank, Boston.

Mr. Fred W. Upham, President, Consumers Company, Chicago.

Dr. W. H. G. Logan, Professor of Oral Surgery, Chicago College of Dental Surgery.

Dr. Gilbert Fitz-Patrick, Chairman Board of Control, American Institute of Homeopathy, Chicago.

Dr. Leo S. Rowe, Director-General, Pan-American Union, Washington.

Surgeon General Edgar R. Stitt, United States Navy, Washington.

Brig. Gen. Robert E. Noble, Surgeon General, Library, Washington.

Hon. R. J. Alfard, Panaman Minister, Washington, D. C.

Judge John Bassett Moore, Court of International Justice, The Hague.

Mr. Samuel Gompers, President, American Federation of Labor.

Brig. Gen. Charles G. Dawes, President, Central Trust Company of Illinois.

Mr. Adolph Ochs, Editor, New York Times, New York.

Dr. Frank Billings, Chicago.

Vice President and Chairman of Board of Directors, Dr. Franklin Martin, Director-General, American College of Surgeons.

Attorney, Mr. Silas Strawn, Chicago.

The chairman of the board of directors has been asked to assume the responsibility of conducting the campaign for raising the money, which carries with it the establishment of headquarters in Chicago, where the Chicago members of directors will act as an executive committee.

7. (a) The campaign will be carried on under the direction of a committee of one hundred physicians and civilians in each state of the United States, each province of Canada, and each of the Latin American republics, with the governor of each state or province and the president of each Latin American Republic to be asked to become honorary chairman of the respective committee.

(b) Each state and province will establish a committee of ten in each county, and in each city of over a hundred thousand inhabitants; and subcommittees of five in each ward of the larger cities.

(c) These committees will be called "contributing committees," etc.—

This will give your body an idea of what the Gorgas Memorial is intended to do, that it has enlarged its scope so much that it has been taken out of the hands entirely of our own organization and has been put into the hands of an international board. I have no doubt but that it will be a great success and we only wish the thorough co-operation of our own Minnesota State Medical Association.

THE PRESIDENT: Do you wish to take action on this report of the Committee on the Gorgas Memorial?

DR. J. A. CAMERON: I move that the report be adopted. (The motion was seconded and carried.)

THE PRESIDENT: The report of the Committee on Cancer, by Dr. Verne C. Hunt.

REPORT OF THE STATE CANCER COMMITTEE

To the President and House of Delegates of the Minnesota State Medical Society:

Your Cancer Committee begs to submit the report of its activities during the past year.

Cancer research has continued throughout the world with resultant accumulation of knowledge regarding its incidence and the relative value of the efficacy of the several accepted remedial procedures, with some apparent standardization of their application. However, until such time as the specific etiology or factors in the etiology of cancer is determined, it is not reasonable to expect that the results of the accepted methods of treatment will be mate-

rially improved through further development or by the institution of new methods at the present average time of their application. Instead, it seems that the opportunity for achievement to greater success in the efforts to combat the disease rests in the continuation of the educational propaganda adopted by the profession. Material improvement in the end results of the accepted methods of treatment may be expected if through education of the public the average length of time between the onset of the disease and application of these methods is shortened.

In accordance with expression of the opinion of the undersigned members of your Cancer Committee embodied in the 1922 annual report, that it can best serve the interests of the Minnesota State Medical Society by co-operating with the American Society for the Control of Cancer in their educational campaigns, the Committee has confined its activities to this work.

In November of 1921 the American Society for the Control of Cancer inaugurated its first annual campaign with noticeably keen interest and co-operation of the members of the State Medical Society. Under the direction of the State Cancer Committee a similar campaign, more statewide than the previous year, was conducted in November, 1922. The campaign consisted of the following:

A large number of public meetings were held throughout the state, the largest one of which was at the auditorium in Minneapolis, where an attendance of two thousand was reported. Doctor Billings' Cancer Lecture was read before religious organizations, lodges, and various clubs. Literature, which had been sent out by the National Society, was distributed, and cancer news articles and editorials were printed by various newspapers. Slides were shown in many of the moving picture theatres. Two 2-reel films, "The Reward of Courage," supplied by the National Society, have been shown throughout the year under the direction and supervision of the State Public Health Association. Many other activities, with which you are probably familiar, were carried out.

The State Cancer Committee would like to take this opportunity to thank the members of the State Medical Society who contributed so freely in time and money during this campaign. It is particularly indebted to those who traveled throughout the state to present cancer lectures at public meetings, defraying their own expenses.

The members of the State Cancer Committee consider this educational work of greatest importance in combating cancer, and urge its continuation under the direction of the State Committee, in addition to such other work as the House of Delegates may see fit for them to undertake.

Respectfully submitted,

VERNE C. HUNT (Chairman)
A. C. STRACHAUER
AARON F. SCHMITT
HENRY WIREMAN COOK
HARRY P. RITCHIE
WILLIAM F. WILD
A. J. CHESLEY

DR. F. L. ADAIR: While I listened to the reading of this report it occurred to me that so far as county co-operation was concerned, there has been no co-operation between the Cancer Work Committee of Hennepin County and the Hennepin County Society. I am very glad to note from Dr. Hunt's report that there is such close co-operation between the State Medical Association and the American Society. There was quite a little friction last year between the county society and some other organizations or committees which were carrying on a campaign without any consultation or attempt to co-ordinate.

THE PRESIDENT: The report will be adopted as read.

DR. VERNE C. HUNT: In an effort to make clear what has been going on, I might say that last year was the second year that this campaign was conducted by the National

Association. It has been the aim of the Cancer Committee to obtain co-operation in this work of all the county medical societies throughout the state. I might say that probably not until this year (for the campaign which is to be conducted this fall) have we been successful in having a county chairman appointed in each county, with the exception of five counties in Minnesota. Last year there was some friction and difficulty in Hennepin County. However, I think that as a result of several meetings that we have already had that any misunderstanding or difficulty that has arisen in the past has been completely ironed out. I am sure that Dr. Strachauer, who has been appointed by the State Association to act as chairman in Hennepin County, will see that the co-operation of the Hennepin County Medical Society is obtained.

THE SECRETARY: Do you know how those appointments are made, Mr. Hunt?

DR. VERNE C. HUNT: The thing about it is that the idea seemed to be that the members of the State Cancer Committee assumed responsibility for the state campaign. There has been an effort throughout the state, not necessarily in Hennepin County, to have county chairmen appointed. It has not necessarily been taken up by each county medical society to appoint that chairman. However, if it is the wish of the respective county medical societies to be instrumental in or to have the appointment of that county chairman I am sure that the State Cancer Committee would be very glad to adopt such a procedure.

DR. G. D. HEAD: It would seem to me that some method ought to be provided by which a very close co-operation could be established between the organizations of all medical men in the county and the work of the State Cancer Committee. I think it would be unfortunate to leave the matter in the disorganized state in which it is now, especially in some counties. It probably would be better for this body to express some suggestion by which that matter could be ironed out.

DR. F. L. ADAIR: I would like to offer a resolution. I had understood that the matter was entirely out of the control of the State Medical Association and that it was under the control of this national organization and the State Cancer Committee, which was not really a part of the State Medical Association. I had proposed, in connection with Dr. Pearce's committee, when he made his report, to suggest that some effort be made by the State Society and the county societies to co-ordinate with the National and the State Cancer Committee in some way, so that this campaign could be conducted through the State Association and its component societies instead of by independent organizations. That is what I had in mind. If it would meet with approval, I would be glad to offer such a resolution.

THE PRESIDENT: It seems that the Cancer Committee would be very glad to co-operate with the State Association and I think a resolution would be in order.

DR. F. L. ADAIR: I move that it be the sense of the House of Delegates that all possible endeavor be made to co-ordinate the cancer work of the State Association with the national and state organizations for the study and prevention of cancer and that the campaign in the state, insofar as possible, be conducted through the State Medi-

cal Association and its component county societies. (The motion is seconded.)

THE PRESIDENT: Would it be wise to have the Resolutions Committee consider that as a proposed resolution?

DR. H. C. BAKER: In our part of the state our medical society complied with the recommendation of the state president merely as a suggestion, when the state chairman appointed a man in our county to act as the head of the Cancer Committee. The state chairman went to the local medical society and he was the one that pushed the thing through. The county society never dreamed there was any opposition between the State Medical Association and the Cancer Committee. We very gladly co-operated. I can say there was not a city in our district that did not have a cancer meeting and not a schoolhouse that did not have a cancer meeting. Meetings were only given up when we had very heavy rain or stormy weather, where the meeting would be hard to reach.

DR. VERNE C. HUNT: I am very happy about this discussion. As chairman of the Cancer Committee I am very glad it came up because we know that this is a new thing. This national work in cancer has been an entirely new thing, and it has taken some time to get the thing started. It was organized in 1913 and the contingency of the war and various other things had some effect on its progress. It was not until the fall of 1921 that the thing was really taken hold of and that results were first obtained. We attempted first of all to get the co-operation of the county medical societies. It was a thing that they were afraid to take hold of, but the work has since been going along in good shape.

As far as Dr. Baker is concerned, I think he ought to be congratulated in the way that they have taken hold in his district. Nothing would please the Cancer Committee more than to have each county society take hold and push it over, and if the Hennepin County Medical Society will take hold of it and push it over I am sure nothing will please the Cancer Committee more. The same is true of any other county society. I am sure that all of the members of the State Cancer Committee will appreciate the co-operation of the county medical societies, and if we can be of any assistance to them to take over the work as a local unit we will do so. We will appreciate every suggestion and I am very happy to hear further discussion in regard to the future activities of this committee.

THE SECRETARY: I wonder if there is not a little confusion as to Dr. Hunt's position. You have two positions in connection with this campaign against cancer; that is, you are chairman of the Cancer Committee of the State Medical Association and you are also chairman for this section of the country, are you not, for the National Committee?

DR. VERNE C. HUNT: Yes. The way the National Society is organized for the conduct of its national campaign, they have divided the country into districts. This district consists of Minnesota, Iowa, North and South Dakota and Montana. A few years ago I was appointed regional director of those five states. The thing that I am interested in is the conduct of the campaign by whatever methods are best. A state chairman has been appointed in each one of those states to work out the lines of campaign for the best interests of each locality and each state. It has been

the intention and the effort on the part of this chairman for each state medical association and each House of Delegates to have a resolution adopted by which they will sponsor the work of the American Society for the work on cancer.

THE PRESIDENT: There is a resolution before the House. All in favor of adopting the resolution of Dr. Adair say aye; contrary. It is carried.

We will now have the report of the Committee on Necrology, by Dr. J. H. Adair. The doctor is not here, but I understand the report will be filed.

REPORT OF COMMITTEE ON NECROLOGY OF THE MINNESOTA STATE MEDICAL SOCIETY

The ranks of our membership have been depleted during the past year by the usual number of deaths. Good men and true have gone to their reward leaving a priceless heritage of labors faithfully performed and duties never slighted.

It is no trite saying that the world is poorer for their loss, for the sum total of their benefits to humanity is not to be measured in professional achievement, but rather by all which concerns the personal relationship existing between the physician and his clientele, and for which even the coin of the realm is but poor recompense.

So amid the turmoil of the busy lives we lead we pause to say "Hail" and "Farewell" to those of our number who now we believe "know in full so many of the things we know in part" and whose lives deserve far more than this brief acknowledgment at our hands.

The following is a list of those we so honor:

NAME	FORMER ADDRESS	DECEASED
Dr. Herman E. Molzahn.....	Saint Paul	10/25/22
Dr. E. L. Maurer.....	Brownton	10/26/22
Dr. N. L. Linneman.....	Duluth	10/31/22
Dr. J. C. Phillips.....	Northfield	11/27/22
Dr. A. A. Campbell.....	Ogema	12/18/23
Dr. C. E. Dampier.....	Crookston	2/20/23
Dr. J. P. Sedgwick.....	Minneapolis	2/25/23
Dr. A. W. Daniels.....	Pomona, Calif.....	2/27/23
(Honorary)		
Dr. R. J. Hill.....	Minneapolis	2/27/23
Dr. G. E. Parsons.....	Elk River	4/ 5/23
Dr. A. B. Ancker.....	St. Paul	5/15/23
Dr. J. L. Lynch.....	Winona	6/20/23
Dr. Geo. E. Benson.....	Minneapolis	7/31/23
Dr. E. W. Buckley.....	St. Paul	9/26/23

Committee on Rules and Order of Business by Dr. Bratrud. I do not think he is here.

The Committee on Hospitals and Medical Education by Dr. W. F. Braasch.

REPORT OF COMMITTEE ON MEDICAL EDUCATION AND HOSPITALS

MEDICAL EDUCATION

Medical Education is necessarily divided into graduate and under-graduate fields. In considering the subject and making recommendations for the future, your committee has both fields in mind.

Graduate Education: The importance of graduate medical education has been recognized in recent years, and may best be considered by discussing its various divisions, namely, (1) Graduate courses of instruction controlled by universities, entailing special study over a period of several years, leading to a degree; (2) Courses in clinical medicine offered to general practitioners at the University, and (3) Systematic courses of instruction given by recognized clinicians to physicians in various portions of the state.

Graduate education in special subjects and affording training to men who desire to specialize is adequately taken care of in Minnesota. In fact, the University of

Minnesota, in affiliation with the Mayo Foundation, has acquired an international reputation for the opportunities offered in the field of graduate medicine. In a recent national survey of graduate work leading to a degree it was unanimously agreed that nothing short of two or three years devoted to intensive study of diseases involved in the various specialties would be of any practical value. As a rule, however, the general practitioner does not desire the type of instruction, nor would it be advisable to use the material now employed for university graduate instruction for other purposes.

The short courses in clinical medicine offered to general practitioners at the University during the summer have proven to be of considerable practical value. It is unfortunate that the physicians of the state have not availed themselves more generally of these opportunities. However, there is little doubt but that in recent years economic factors have restricted a larger enrollment. It would seem, furthermore, that these courses have not been adequately advertised among the medical profession and we would recommend a more widespread publicity.

Undoubtedly, considerable benefit to general practitioners has been derived from the so-called "Clinic Weeks" held annually in the larger medical centers. That it is appreciated is evidenced by the increasing registration during the past few years.

Although the value of set papers such as appear upon the program for this session is beyond question, nevertheless the question arises whether greater emphasis of the clinical opportunities should not be made, similar to the programs of the Tri-State Medical Society.

The habit of taking trips to recognized clinical centers in this state and elsewhere should be encouraged. In no other way can a broad knowledge of the progress in medicine be acquired.

This committee heartily endorses the movement successfully carried out in several states which brings the opportunities for graduate medical instruction to the various portions of the state, so permitting a minimum loss of time and expense to the general practitioner. The various systems already developed in the several states should be carefully studied and adapted to the needs and circumstances existing in Minnesota. Such a system of graduate instruction might well be controlled jointly by the State Medical Association and the University. Such a movement should be coincident with a comprehensive statewide campaign of systematic presentation of medical subjects to the laity, since the future of medicine depends not alone on continued public effort but also that the physician is worthy of public confidence.

Therefore, to be specific, this committee would recommend the following:

(1) That the present system employed in intensive medical instruction leading to a degree in the various specialties be endorsed.

(2) That the University of Minnesota offer several courses of instruction at different periods of the year and possibly in a more concentrated form. Such courses deserve greater publicity and support among the physicians of the state.

(3) That the clinical opportunities offered during the Clinic Weeks in the larger cities be encouraged and developed even farther.

(4) That a system of graduate medical instruction be given by competent instructors in various portions of the state, enabling the general practitioner to become familiar with recent medical progress.

Under-graduate Education: In regard to under-graduate medical instruction as carried on at the University Medical School, we wish to state first that we are in accord with the sentiments expressed in the report of your committee on medical education of last year. We are glad to note that many of the recommendations made in this report have been followed during the last year by the University authorities.

It has been claimed that it was impossible to adopt some

of the recommendations in the Medical School because of a lack of funds. It would seem desirable that the members of this Association lend their aid to secure adequate funds in order that this and other progressive measures may be made available to the University Medical School.

Furthermore, the university authorities have been unable to secure the funds necessary to the completion of the building program of the Medical School, so that crowding and inadequate facilities hamper instruction. In order that the Medical School may be developed to the highest degree of efficiency, there seems to be no other recourse than to obtain donations from private individuals and institutions. Attention should be called to such generous donations which have been made to the University of Minnesota during the past year. We refer to the gifts made by (1) Mr. W. H. Eustis for the Children's Hospital; (2) Mrs. F. C. Todd and friends for the Todd Memorial Hospital, and (3) by the Citizens Aid Association of Minneapolis for a Cancer Hospital. We would recommend that the movement which is now on foot to solicit funds from the great foundation for the medical school receive the cordial and unanimous endorsement of the State Medical Society. We would also recommend that a statewide campaign sponsored by the members of this society be organized in order to influence wealthy patients or friends to make bequests to the Medical School, for how could surplus wealth be better expended than to promote institutions devoted to the alleviation of human suffering? For after all, the University Medical School is your medical school and every member of the Association should be vitally interested in its welfare.

HOSPITALS

Recent surveys made by the American College of Surgeons and the American Medical Association have so thoroughly covered the subject of hospitals in this as well as other states that there is but little left for this committee to suggest. During the past year, however, several matters have arisen in relation to hospitals in the state which deserve particular attention.

In the first place, we wish to endorse the action taken by the Board of Control of Ramsey County in consulting the Ramsey County Medical Society when appointing a successor to the late lamented Doctor Ancker. It is evident that the public, through the Board of Control, has confidence in the Ramsey County Medical Society, knowing that they would be disinterested in the choice of the most capable man for so important an appointment. If a similar action were taken by other institutions, the efficiency of the management of our larger hospitals would be guaranteed.

RELATION OF PUBLIC HOSPITALS TO MEDICAL EDUCATION

In general, we endorse any movement which would permit closer co-operation between the municipal hospitals and the University Medical School. The co-operation of the governing body of the hospitals, the medical societies and the medical school will undoubtedly not alone prove to be a very valuable asset for medical education, but for the hospitals as well.

We endorse the movement on foot to place the Minneapolis General Hospital on the University Campus or on land adjacent to the Medical School. Its location near the Medical School would be of inestimable value to medical education and also to the hospital as an institution for the care of the sick.

Co-operation of the Medical School and its hospital and laboratory equipment with the large municipal hospitals should furnish both for student and practitioner a splendid opportunity to observe the practical application of Medical Science. A municipal hospital conducted along these lines should develop not only more intensive instruction for the student, but by means of clinics and conferences, should furnish an opportunity for at least the practitioners of the city to keep in closer touch with the experience of the hospital.

The value of education in connection with the hospital from the practical side alone is inestimable. The student

interne plan as carried out in the municipal hospitals is of great value to the medical students who, almost without exception, are enthusiastic about it. The municipal hospital is of vital importance to medical education, and on the other hand medical education is of vital importance to the hospital. The proper affiliation of all these interests is bound to redound to the advantage of both teaching and practice.

THE MINNESOTA GENERAL HOSPITAL ACT

This act was amended by the last legislature, making County Commissioners instead of Probate Judges the designated officials to certify indigent patients to the University Hospital. The Medical School is making efforts to educate officials and people and to popularize the hospital under this act, which provides for the joint payment for such patients by the county and state, thus relieving the educational funds of the University. The members of this Association can do much for the Medical School by bringing deserving cases to the attention of the County Commissioners and by certifying to their suitability for hospital treatment under the act. The doctors would then also assist their respective counties to receive their share of the state aid in this matter. It may be added that the law provides for the payment of physicians who examine and certify to such patients.

It should be emphasized that the University ought not to be expected to support a large hospitalization project purely from educational funds and, indeed, that the institution, on account of the large demands upon its resources from the standpoint of instruction cannot do this, even if it so desired. We, therefore, endorse as a simpler and better law, that the whole cost of hospital care be charged directly to the state according to the plan adopted in some other states.

W. F. BRAASCH (Chairman)
ARCHA WILCOX
A. R. COLVIN

THE PRESIDENT: Any discussion on this report of the committee?

DR. G. B. HEAD: I would like to move the adoption of this report, which it seems to me is excellent, and that a copy of the same be forwarded, if the House approve of it, to the President of the State University, and transmit it to the Board of Regents.

DR. H. M. WORKMAN: I second the motion. (The motion is duly carried.)

THE PRESIDENT: Report on Public Health by Dr. E. L. Tuohy.

DR. E. L. TUOHY: I might add that this committee personnel consisted of Dr. Albert Chesley and Dr. Helmholtz, Rochester, Dr. Albert Chesley being of the State Board of Health. While we have had no actual meetings, we have had much correspondence, and some of the work we have attempted to do merged somewhat with the same material dealt with by Dr. Savage.

REPORT OF THE COMMITTEE ON PUBLIC HEALTH THE MINNESOTA STATE MEDICAL SOCIETY

Your committee desires to submit the following report, with just such amount of detail as to indicate the kinds of interest and concern the members of this society should have toward a variety of public health measures:

(1) Public Health, from the administrative point of view, has arrived at a very high plane of efficiency in Minnesota. Much of the credit for this is due the members of this society. Nevertheless, it is evident that the members of the profession do not easily sustain their interest in public health measures.

To illustrate: Public agencies, sanatoria and tuberculosis dispensaries have taken over most of the supervision

and care of the tuberculous. This has occurred in spite of the protests of the agencies in this field. It is increasingly difficult to get general hospitals to make provision for tuberculous cases. Interns and nurses in training look askance at such patients; few physicians in private practice seem to care to master the details of modern safe home treatment. Yet, it is agreed that under no possible practical extension of our sanatoria will more than one-fourth or one-third of these patients be institutionalized at any one time. Few physicians even, developing tuberculosis themselves, are given the proper encouragement to enter our sanatoria and protect themselves in this most useful specialty for their life work. There are many opportunities in our own state for these unfortunate members of our profession.

(2) Public Health, from the laboratory side, has been administered sanely, economically and consistently in Minnesota for over two decades. These laboratory facilities could not have been developed solely to assist the physician in his daily grind of making a living. If that were the case, then the engineering school would have developed public laboratories for private assaying or such blacksmithing novelties as acetylene welding. It must be perfectly obvious that the constantly increasing volume of work done by our state laboratories has come about through the proper effort to unite the practising physician up with the state and local health boards, whose primary business it is to restrict and limit disease.

To illustrate a means for our closer co-operation: The Division of Venereal Diseases of the State Board of Health has been performing routinely the Kolmer modification of the Wassermann test. It seems to many that this test is more sensitive and at the same time quite as safe from misinterpretation as any previous technique. Let us at this time, therefore, co-operate with this division in giving them our heartiest aid in the interpretation of their reports, and in giving to them freely of our clinical data. Let us do this rather than attempt to mix them up or enter into senseless judgment on the varying reports of the laboratories on the same specimens of blood.

(3) Voluntary groups and relief agencies are carrying on a large amount of work which narrowly borders upon, or in fact encroaches on, the work of the practicing physician.

To fail to take keen interest in these endeavors is to fasten their conduct and direction on a crowd of social workers and others without our point of view, and certainly without our medical judgment.

To illustrate: Our medical societies should insist on medical membership on a great variety of boards and committees doing relief and social work. We should ask for this not by any right of priority, but because of our inherent ability to serve, direct and guide medical endeavor better than anybody else. Medical inspection in schools should not be directed by social workers. While much of the routine work can be done by properly trained laymen and women, nevertheless, well-balanced and proportioned health work in our schools is a field that parents cannot afford to see relinquished by physicians.

(4) The term "Doctor" is presently coming to mean less and less, and we begin to see why our English brethren within the profession have never been particularly happy with it.

To illustrate: A rather large proportion of the population is fitted with glasses by optometrists or those of lesser training. Some of these men even fit school children with glasses. Optometrists claim the right to use the term "Doctor" because they are licensed as "Doctors of Optometry." It is quite apparent, however, that the public does not differentiate them from medical oculists with a medical degree and many more years of training. They are virtually "short-course doctors." Neither do they practice in sparsely settled districts, nor do they exact any lower fees from the public than our brethren, full-fledged specialists in diseases of the eye.

This simply focuses our attention upon the fundamental

need of working consistently for a public opinion that will ultimately agree upon uniform preliminary standards of medical education—a true "Basic Medical Practice Act."

(5) New legislation is not always needed to push forward our efforts. Some things seem to remain undone because of delayed or lacking initiative.

To illustrate: Goiter prevention is one of the most striking opportunities for our profession to demonstrate its essential altruism. Every county society should have presently an active committee, working upon the problem of the best and most satisfactory means of providing iodine in some form, at stated intervals, to children and prospective mothers. A number of cities within our state have already discussed the question of adding iodine to their public water supplies. From data presently available, this method seems entirely feasible. The State Board of Health stands ready to co-operate with, and advise, any local community desiring to inaugurate this measure. If iodine is not to be administered in drinking water those portions of the population, particularly susceptible to goiter, should be induced by other means to take the iodine in some other form.

(6) We should aim to profit in every degree possible by the experiences and instruction which happen to be the scant holdover of good coming out of the Great War.

To illustrate: We should take fuller cognizance of the splendid work that has been done along the lines of physical reconstruction and vocational training. This work is gaining headway very slowly, and certainly our more concentrated areas of population show very large groups of crippled and maimed individuals who are unable to take their full part in the affairs of life. As the result of chronic infection and industrial crippling, we have a constant flood of incapacitated individuals upon whom the ordinary vicissitudes of life are daily proving disastrous. It is the common complaint that members of our profession do not give enough heed to the details of the reconstruction and training that these men and women need. Unless our hospitals take more interest in various mechanical means of providing both treatment and rehabilitation, we cannot wonder if these people venture upon the uncharted seas of quackery on their own initiative.

(7) The physician's personal conduct and example.

To illustrate: We should stand staunchly against any and all legislation that aims to use us to enforce a moral issue. Under the guise of a supposed medical need, the medical profession has been made the only legal agency through which alcoholic spirits may be secured by the public. The result is presently disastrous to our profession, and helps to put us in public contempt. We are losing prestige daily on account of the percentage of men in our profession who cannot stand the strain upon their moral stamina, and they fall victims to solicitations of tipplers and bootleggers, who either buy their prescriptions outright or peddle them to tipplers. Immoral, intemperate, abortion producing, booze writing members of our county societies should have their names taken off the roster until such time as they demonstrate their fitness to have membership restored.

(8) The House of Delegates last year endorsed the recommendation of the Health Committee and the State Board of Medical Examiners, with the Board of Control, for a general survey of the question of midwifery in Minnesota. This survey has been completed by Dr. Ruth Boynton, who assisted Dr. E. C. Hartley, Director of the Division of Child Hygiene. This work will be reported upon before this society at this meeting.

(9) Regarding the provisions of the Sheppard-Towner Act, we must report that the organized medical profession, one hundred per cent strong, has come forward without delay, and assisted in the organization of the County Administrative Board. Some difficulty here and there has been encountered in organizing this board, but it has never been due to lack of interest on the part of the physicians and health officers throughout the state.

(10) The work of the Vital Statistics field agent is fortunately being done again through the appropriation for the Division of Child Hygiene. In about six months in

1922 the field agent examined the records in thirty places, and secured two hundred and three birth certificates and twenty-three death certificates not previously filed according to law. Between January 1st and October 1st, 1923, the records in twenty-five places have been examined, securing one hundred and twenty-three birth certificates and thirty-nine death certificates of like character. Some prosecutions have been carried through, and a number of physicians have been brought to the realization of their duty by proper pressure.

(11) A nearly successful attempt was made by the State Board of Health to have passed by the legislature a bill to reimburse those typhoid carriers who were unavoidably kept from their ordinary duties by the restrictions incident to the protection of the general health of others. This is a principle which if once established might have far-reaching influence. One hundred and five typhoid bacilli carriers have been traced. Quite conclusive evidence has been produced to show that they were responsible for five hundred and twenty-eight cases of typhoid fever, with thirty-six fatalities. Reasonable measures only have been resorted to to control these carriers; the Dairy and Food Code under Section 45 has enabled the board to refer to the Dairy and Food Department such disease carriers who are not amenable to the supervision possible under the methods of the Board of Health.

Respectfully submitted,
E. L. TUOHY (Chairman)
A. J. CHESLEY
H. F. HELMHOLZ

DR. W. A. COVENTRY: I would like to ask if the statistics of the Bureau of Vital Statistics by the committee are the revised statistics or the first report that came out. The first report came out and some doctors were notified that certain birth reports were wrong. They said that certain births were not recorded. There was a flood of doctors to the Health Department to find out what was the matter. It appears that the investigators had gone to the different hospitals and had taken names from the hospital records, and if there was no report in the St. Paul office then the doctor that attended that case was called on the carpet, so to speak, and asked for the reason why the birth report had not been made out. It was found that there were many errors in obtaining the statistics. For instance, the name of the patient may have been wrong in the hospital and the doctor had the right name and made the report. He might have reported Frank James and at the hospital it was James Frank. Another doctor found out that after he had made out the report it was mailed to the local department and a copy was sent to St. Paul and another copy to Washington and in the jumble it happened that the report did not get to the state office. So I think this gives a wrong impression, especially if these figures are based on a preliminary report.

DR. E. L. TUOHY: The figures have certainly been checked and I assume they are correct.

DR. C. L. SCOFIELD: I just want to say that these figures as rendered are correct. I have gone into a physician's office and have found anywhere from three, four or fifteen reports that he has pigeonholed in his desk, covering a period of two or three years. They have never been sent to the State Board of Health nor to his local registrar. It is a case of neglect on his part. There are plenty of cases of that kind that we have on record in the office.

THE PRESIDENT: If there is no further discussion of this report it will be adopted. Committee on Public Health Problems in Education by Dr. A. J. Chesley.

DR. N. O. PEARCE: Dr. Chesley wired me yesterday that he had made this report and hoped it would be here in time. So far it has not come. I have not received it.

REPORT OF COMMITTEE ON HEALTH PROBLEMS IN EDUCATION

Gentlemen:

The president of the Minnesota Education Association appointed Dr. O. M. Haugan, Fergus Falls, Mr. H. A. Johnson, Mayo Clinic, Rochester, and Miss Lue A. Olds, Superintendent of Schools, Granite Falls, to represent that Association on the Joint Committee on Health Problems in Education.

There has been no opportunity for the members of the Joint Committee to get together, but this can be done during the M. E. A. meeting October 21-Nov. 3.

The legislature of 1923 made progress by passing Chapter 323, which provides for:

Physical and health education and training in all public schools of all pupils of both sexes unless physically unfit,
Suitable modified courses for pupils physically or mentally unfit to take courses provided for normal pupils,
No physical or medical examination or treatment of pupils whose parents or guardians object to same,
Physical and health education and training for all persons in training to become teachers,
Commissioner of Education to supervise the work and to prepare and publish and distribute manuals of instruction, to appoint a state Director of Physical and Health Education.

Mr. E. W. Evarts has been appointed Director of the Department of Physical and Health Education. He has conferred with the State Board of Health, the Department of Preventive Medicine and Public Health of the University regarding his program. Before publishing this manual, it will be submitted to these two bodies and to the Advisory Commission for Tuberculosis, the State Board of Control, the State Medical Society and others whose co-operation Mr. Evarts seeks.

The Department of Preventive Medicine and Public Health of the Medical School now gives courses to all medical students and also to students in the academic and technical colleges. Its teaching staff includes paid University instructors and unpaid members of the staff of the State Board of Health, the health departments of the Twin Cities, and from other official and unofficial health organizations.

The Division of Child Hygiene of the State Board of Health has met with success in its educational work conducted through the Extension Division of the University as a regular correspondence course for mothers and expectant mothers, and through the schools where classes in "Mothercraft," care of the baby, etc., are formed among girls of upper grades and high school. All schools in St. Louis County have this course as part of the regular school work. Other counties are interested, and when the textbook prepared by the Division for teaching the subject (now in press) is available, many counties will take up the work.

Everywhere the members of this Association have taken great interest in the program of the Division of Child Hygiene, and the number of mothers referred by them is constantly increasing.

The Minnesota Public Health Association Journal, under the editorial board of this Association, has taken an active and important part in public education relating to health subjects.

The Federal Board of Education has issued recently "Health for School Children," a report of the Advisory Committee on Health Education of the National Health Council. Your committee respectfully recommends this pamphlet (which may be had at 10 cents a copy from the Government Printing Office, Washington, D. C.), as well

as those of the Joint Committee of the A. M. A. and the National Education Association:

"Minimum Health Requirements for Rural Schools,"

"Health Improvement in Rural Schools,"

"Health Essentials for Rural School Children,"

"Illustrated Health Charts,"

"Health Service in City Schools,"

"Daylight in the Schoolroom,"

to physicians interested in health problems in education.

The A. M. A. held no conference this year of State Committees on Health Problems in Education. But the programs of the National Education Association and the International Conference on Education were full of health subjects.

Commenting upon the situation, Dr. John M. Dodson, head of the new Bureau of Health and Public Instruction of the A. M. A., which has replaced the Council on Health and Public Instruction organized in 1911, when the National Education Association and the A. M. A. met simultaneously in California, writes:

"Twelve years ago the general attitude of teachers toward instruction in physiology, hygiene and health was one of indifference, if not of antagonism. Today the leaders in the educational world are all but unanimous in the conviction that training for health must be the first thought in the process of education and they are framing their program on this basis. This radical change of view on the part of educators has not been due wholly to the work of the Joint Committee, but the Committee has been an important factor in bringing it about."

The new Bureau of Health and Public Instruction of the A. M. A. will continue the relationship previously held by the Council with the National Education Association. Dr. Dodson considers the Joint Committees in the States of more importance in getting results than the National Joint Committee.

Your committee recommends that the House of Delegates consider enlarging the membership from three to five so as to include a representative of the Department of Preventive Medicine and Public Health of the University, and to request the Minnesota Education Association to do likewise and include the Director of the Department of Physical and Health Education. The future promises much advance in health education in Minnesota, and the State Medical Association should be the leader in the work.

Respectfully,

ELIZABETH WOODWORTH

N. O. PEARCE

A. J. CHESLEY, Chairman

THE PRESIDENT: Committee on Miscellaneous Business by Dr. H. F. McGuigan of Red Wing.

DR. H. F. MCGUIGAN: There is nothing to report.

THE PRESIDENT: Statewide Publicity Committee, Dr. N. O. Pearce.

REPORT OF COMMITTEE OF FIFTY OF THE MINNESOTA STATE MEDICAL SOCIETY

This committee was appointed with two purposes in view, first, to promote schemes for proper publicity for the medical profession; second, for the purpose of studying the activities of public health and social organizations and making recommendations to this body governing our relations to the work of such organizations.

Under the first item, we have to report that we have co-operated with the Minnesota Public Health Association in the publication of the *Northwestern Health Journal*. The journal, as most of you know, is issued monthly and is devoted exclusively to educating the public in matters pertaining to medicine, dentistry and nursing. It is edited by a layman, but the material is all obtained by consulting men in the profession, and then criticized and censored by Dr. Wild of the Minnesota Public Health Association or the Board of Editors. The subject matter has been carefully selected with a view to giving people information on

every-day problems of healthful living. The articles are short and couched in simple language easily understood by the uneducated layman, and the importance of medical advice is constantly impressed on the reader. In the eight issues so far published, there have been 17 articles on disease and its prevention, 5 on tuberculosis, 14 on eye, ear, nose and throat, 20 on food and nutrition, 27 on personal hygiene, 7 on industrial hygiene, 8 on mental hygiene, 13 on the care of the child, 10 on public health, 5 on the history of medical progress, 34 book reviews, 11 on dental subjects and 8 articles submitted by the Parent and Teachers and Nursing Organizations. Every effort has been made to keep away from the sensational, to make the articles interesting and to write down to a level that would reach the mind that has depended on the old-fashioned almanac for its medical advice.

The response to the subscription campaign, for this little magazine, has been very gratifying, the *Journal* on September 15th having 6,497 paid subscribers, of whom 403 are physicians, 182 dentists, and the rest members of the laity. There will be no trouble in increasing this subscription list to 10,000 or 15,000 during the next year, if we are able to obtain sufficient advertising to cover the increased cost entailed in printing and distributing that number. The public is interested and appreciative of this little journal, and it will be a real force in the medical education of the laity. The committee wishes to extend thanks to the Minnesota Public Health Association in general, and especially to Dr. Scofield, President, and Dr. Wild, Executive Secretary, who have given generously of their time, and who have made the publication of this journal possible.

Plans for the future involve some arrangement through which articles in the journal may be given to the country press in such shape that it will be possible for these papers to use them, thus reaching many thousand more rural readers. We are also attempting to have large industrial concerns subscribe to the journal for the families of their employees. Several large concerns are favorably considering this idea at present.

Relative to the second phase of the work, your committee feels that the large and ever increasing amount of public health and social work carried on by organizations, both state and voluntary, presents a vital problem to the practicing physician. The work of these organizations is no longer the haphazard, unorganized, ineffectual, sporadic, poorly directed efforts of well meaning but untrained philanthropic individuals, but is now as a whole tremendously efficient, well financed and with a definite program. And these organizations number among their salaried personnel many of the keenest and best trained people of the community. They are probably a permanent part of our community life, and the scope of their work has, as yet, no definite limitations. Their work is founded on the sound principle of educating the people to ways of better health, longer life, and better living conditions. They have the sympathy and support of the public, and the relation of the practicing physician to this movement becomes more uncertain with each new step they take into what has been conceived as the field of medicine. Fortunately, the work of these organizations leads the public toward medicine and not away from it. Undoubtedly, the large majority of physicians are in hearty sympathy and are ready to co-operate with all properly supervised public health and social activities. On the other hand, there are still many practicing physicians who are passively antagonistic and entirely without sympathy or desire to co-operate with this type of work, which they feel is an unnecessary, unwarranted and fruitless encroachment upon their exclusive field of activity. Again among some there is an underlying feeling that those who are interested or connected with public health activities are doing so largely for the purpose of exploiting these organizations through motives purely selfish and looking to personal gain. If there is ground for this, it must be removed. Certainly, the practicing physicians, through their organizations, must now take a most active part in this public health movement which is gaining such force and

has become such a large factor in the determination of the future status of the practice of medicine. Your committee believes that, without doubt, public health organizations are today the greatest enemy of all cults and healers, outside the field of regular medicine, and the medical profession should be behind this movement without reservation, but, in order to make this possible, we must develop among ourselves definite plans for co-operating with and guiding this work so that it remains in its proper channels. There are several things to be accomplished: first, we must so conduct ourselves that there will be no unfairness between physicians themselves; second, we must train organizations to seek advice and co-operation from our state and county societies rather than from individual members; third, we should be prepared through the appointment of necessary committees to meet such demands in a prompt and efficient manner; fourth, these organizations must be taught that in order to have the full co-operation of our societies they must conduct their work so as to respect the rights of the practicing physician.

In an effort to determine the sentiment of the medical profession relative to our relationship to public health and publicity work, fourteen proposals were submitted to the members of the committee with the understanding that only those which received practically the unanimous vote of the members of the committee would be submitted to the House of Delegates. Of these proposals, there were only six which received such vote of those members of the committee reporting, and these proposals are embodied in the following resolutions.

In presenting these resolutions, the committee does not wish them to be construed as in any manner showing a lack of appreciation of the valuable work of health organizations, or a lack of sympathy and desire for co-operation on the part of the medical profession, but rather as a sound working basis for greater harmony and fullest accomplishment. In order that the resolutions may have real force, they have been constructed on the principle that, while we assume no right to dictate to any health or social organization, we have the right to adopt rules governing the conduct of our own members.

1. Resolved that no physician engaged, or associated with men engaged in private or consultation practice, shall become associated in any manner whatsoever with the establishment and maintenance of any new, free, permanent clinic or dispensary until such project receives the sanction and endorsement of a duly authorized committee of the county medical society in which such proposed clinic or dispensary is to be located.

2. Resolved that no physician engaged as specified above shall associate himself with or become a party to any health or social organization engaged in the establishment and maintenance of permanent free clinics or dispensaries unless such organization maintains a social service investigation department of sufficient scope and efficiency that it can exclude from such free service individuals who are able to pay. The efficiency of such a department shall be determined by a duly authorized committee of the county medical society in which county such clinic or dispensary is conducted.

3. Resolved that no physician engaged as above specified, shall be a party to, or in any way associated with any voluntary organization conducting clinics or dispensaries of any type whatsoever where any compensation is accepted from the patient for medical services rendered.

4. Resolved that no physician engaged as above specified, shall in any manner be associated with any voluntary health organization making unsolicited visits in the home in case of sickness, or where there is a newborn child, unless such organization shall first confer with the attending physician, if there be one in charge of the case.

5. Resolved that the responsibility for the carrying out of all of the provisions set forth, or for infringements thereon, shall lie directly with the physician involved. A plea of lack of knowledge shall not be considered a valid excuse, as it is incumbent among physicians, especially

those engaged as clinicians or associated with public health or social organizations, to see that the work of their organizations do not unfairly infringe upon the rights of physicians in private practice.

6. Resolved that because of the very close association of the work of the practicing medical profession and the public health organizations, it is desirable that, whenever possible, the county medical society, in which county such organization is located, should have official representation on the governing board of such organization.

7. Resolved that each county society be requested to appoint a committee on public health and publicity matters; this committee to be prepared to carry out the provisions of the foregoing resolutions, and to co-operate in a prompt and efficient manner with the public health activities of the county, also to co-operate with the Statewide Publicity Committee in their plans.

8. Resolved that the secretary of this association be instructed to forward to each county society a copy of the above resolutions.

	Affirmative	Negative	Question	No Vote
Rule No. 1.....	29	2		
Rule No. 2.....	30	1		
Rule No. 3.....	28	1	1	1
Rule No. 4.....	22	5	3	
Rule No. 5.....	24	4	2	
Rule No. 6.....	28	1	1	1
Rule No. 7.....	25	3	2	1
Rule No. 8.....	25	5		1
Rule No. 9.....	20	8	1	1
Rule No. 10.....	25	5		1
Rule No. 11.....	21	4	4	1
Rule No. 12.....	19	5	5	2
Rule No. 13.....	29			2
Rule No. 14.....	30			1

N. O. PEARCE,
Chairman

THE PRESIDENT: Any discussion on the report of this committee and these resolutions? If not, they will be adopted as read. What is there under the head of Old Business?

THE SECRETARY: Mr. President, in the meeting a year ago an amendment to Article IX, Section 3, of the Constitution was proposed, which has appeared in the last two issues of MINNESOTA MEDICINE. I will read it. The section mentioned reads as follows:

"The officers of this Association shall be elected by the House of Delegates on the morning of the last day of the Annual Session, but no Delegate shall be eligible to any office named in the preceding section, except that of Councilor, and no person shall be elected to any such office who is not in attendance upon that Annual Session, and who has not been a member of the Association for the past two years."

It is proposed to change the section to read as follows:

"The officers of the Association shall be elected by the House of Delegates at a meeting to be held the second day of the Annual Session,—that would be tomorrow instead of Friday, "but no delegate shall be eligible, etc.," the change simply being, instead of the last day of the session, to have the last meeting the second day of the session.

THE PRESIDENT: What action shall we take on this?

DR. J. C. LITZENBERG: I move its adoption. (Motion is seconded and carried.)

THE PRESIDENT: New Business.

THE SECRETARY: Mr. President, I received a communication from Dr. Adair,—do you wish me to bring this up, Dr. Adair? The Society of Obstetrics and Gynecology has

applied for a Section in the State Medical Association, and a list of thirty doctors has been sent in, who petition for this special section, corresponding to our sections now under surgery and medicine, to be known as the section on Obstetrics and Gynecology. I might say that, in order for this step to be taken, this matter has to lie over until the next meeting, which is the adjourned meeting of this present meeting to be held Friday morning.

THE PRESIDENT: Is there any discussion on this petition at the present time, or shall we postpone discussion to the next meeting?

DR. G. D. HEAD: I think a provision has been made whereby anything of this sort should be referred to a reference committee for consideration and report. This is an important matter and I move you that this matter be referred for consideration to the Committee on Rules and Order of Business.

DR. H. Z. GIFFIN: Could that be referred to the Council?

THE SECRETARY: This is a matter of changing the By-Laws of the Constitution and these can be changed by a majority vote of the House of Delegates after a matter has lain on the table one day. I might say that this matter was taken up at the meeting of the Council this morning. They decided to simply refer it to the House of Delegates with no recommendation, to be discussed by the House of Delegates and to take whatever action they saw fit.

DR. F. L. ADAIR: I might say, in explanation of this request, that some of us feel that it is quite important, in view of all the propaganda regarding general welfare that the medical profession give a little more attention to the subject of obstetrics. It would be well if there could be some section of this State Association whereby obstetric problems could be presented and threshed out, not particularly for the benefit of the practitioner but to raise the general level of the practice of obstetrics in the state, and to bring before the practitioner the importance of better obstetric practice and to present ways and means whereby it can be obtained. I think the justification for asking for a section is that, if sections are recognized at all, certainly, so far as obstetrics is concerned it is one of the major branches of the practice of medicine. If there is any justification for sections at all there should be three sections instead of two, one in medicine, and one in obstetrics. It is of vital importance, I think, not only to the medical profession but also to the public that more stress be placed on obstetrical questions. That is the reason that this matter is presented to you at this time.

THE PRESIDENT: I think this is a very important matter. I do not think there is any question but what we are all agreed that we should give as much attention to the subject of obstetrics as anything else. I think we all feel that way. It has been my experience, however, from the little experience I have had in medical societies, that if a medical society of this size were divided up into too many sections, there might be a loss in interest, and no one section be of any value. I myself feel that if we form a section in obstetrics that the orthopedists and the pediatricists and people of that kind, who have a specialty, might feel that they want a section. I know from our experience in the American Medical Association; at one time they had something

over twenty sections. That has now been reduced to sixteen. They had a section in proctology and stomatology, each one felt their importance, and each wanted a section.

I agree with the ones who offer this petition that the practice of obstetrics, especially in the state of Minnesota, is of more importance to the general medical man than anybody else. It is my own opinion that we should handle obstetrics on the program as we do now and keep the two sections. I think we ought to think that over and discuss it, and if there is no objection I will name a reference committee of three or five men to work this over and report on it Friday, unless you would like to do something else.

DR. F. L. ADAIR: I move that such a committee be appointed but that they consider more than that. I think they should consider the advisability of holding sessions devoted to different specialties rather than one session; that we have one morning devoted to a certain subject and another session in the afternoon instead of having two sections held at the same time. Possibly these specialists, with the chairman and the secretary, could make a combined program committee and make a program for the whole society and also for the session.

DR. J. C. LITZENBERG: In presenting this plan it is not at all the idea to form another section of specialists. We have our own special societies with which we are perfectly satisfied and we have altogether too many meetings, anyway. It was the idea that this major branch of medicine, which is of great interest to the country practitioners, should be given more attention, and that the chairmen and secretaries of the section on medicine and the section on surgery have not in the past exhibited enough interest to provide enough obstetrical papers for the benefit of the general practitioners. It is just as much a part of general medicine as medicine and surgery. I do not think that the objection that all of the different specialists will come in and ask for a section is well taken. I think it is a matter for the general practitioner to consider and I second Dr. Adair's motion.

THE PRESIDENT: Is there any further discussion? Dr. Adair's motion was to have a committee appointed to discuss this.

DR. F. L. ADAIR: Yes, a committee of five. (The motion was duly carried.)

THE PRESIDENT: Is there any new business to come before the House?

DR. F. L. ADAIR: It seems to me that there is a lot of overlapping of the reports of committees; I do not know whether there is an overlapping of committee activities or not. In looking over the committees I do not know how many are standing committees provided for by the constitution and how many are special committees. It seems to me it would shorten the proceedings and add to the efficacy of conducting business if these committees could be combined into two, a committee dealing with Medical Education and Hospitals and another one dealing with Public Health and Welfare, including Publicity and that sort of thing. I think we have some overlapping here. I do not know how many are provided for by the constitution and how many are special.

THE SECRETARY: In the constitution, under Chapter 8, the standing committees are provided for, as follows: Com-

mittee on Scientific Work, consisting of two sections; Committee on Public Policy and Legislation, Committee on Necrology, a Committee on Arrangements, and such other committees as may be necessary, such as are elected by the House of Delegates. Last year at our meeting a provision was made for certain committees being made standing committees; for instance, the Committee on Hospitals and Medical Education, it was voted to make that a standing committee. I presume that meant a committee from year to year. Then there were special committees appointed, for instance, for the Gorgas Memorial Fund. I must admit that in the holding over of certain other committees I had to use my own discretion on whether to allow them to die a natural death or not.

I think myself that we have too many committees, but I tried to play safe. When there was any question in my mind I have simply held over the committee that was in existence before. I think it was Dr. Head who, two years ago, presented a report wherein he recommended the appointment of reference committees. Whether that was to supplant all the other committees, or to supplement them, or simply provide a means, for instance in regard to this change in sections, for appointing a committee to act on some special proposition and report at the next meeting, I could not be sure.

I think it would be a very good scheme if we could decide definitely just what committees ought to be standing committees and what committees could be eliminated. Someone might make a motion that certain committees be discontinued. That would make it clear and it would make it easy for me to know what to do in regard to making out a list for the next meeting.

DR. J. C. LITZENBERG: In these reports it appeared to me that many of them are worthy of more careful consideration than just listening to them being read. I wonder if it would be practicable to have all reports of committees in the hands of the chairman or have them sent direct to all of the delegates sufficient time before the meeting so they could see and digest them and have the reports only in synopsis. There are subjects in which I am deeply interested and I cannot get their full import in hearing the reports read. I would rather spend my time in reading the reports over carefully before I come here. Sometimes there are important resolutions to be offered which we should know about beforehand.

I want to make a motion, but will not do it unless it meets with the approval of the House of Delegates. It seems to me that if we had the reports in our hands and read them over beforehand, then we could come here and act on them intelligently. At the meeting the reports could be offered in synopsis and it would not take so long a time to present them.

DR. W. F. BRAASCH: I would like to endorse that sentiment. It occurred to me as I read my report. I would like to have some definite action upon some of the suggestions I made and I think the same thing should be done with some of the other reports. I certainly endorse that very heartily. I would like a motion made to the effect that the committees be expected to have the reports in the hands of the Secretary, who shall have printed copies made

and sent to all the delegates at least a week before the meeting, so they can act upon them.

THE SECRETARY: Before any action is taken on that, let me call attention to the fact that most of the printed reports of these meetings consist of the reports of the different committees and take about thirty pages in small eight-point type in MINNESOTA MEDICINE. It would mean that of every committee report as it comes in, and some would come in the last minute, there would have to be fifty copies made and sent out. It would mean a lot of expense. Of course, if it is worth while, all right.

I think you get further by committee action than in any other way. I think when you have committees that have considered these different propositions and considered them for a year and worked up their reports, if there is anything the House of Delegates does not like they are perfectly free to express themselves on the floor. This would mean the piling up of a lot of work. I cannot imagine myself doing it; I shall engage someone else to do it and charge it up to the Association.

DR. J. C. LITZENBERG: If it is worth doing it is worth paying for, if the suggestion is any good, and I believe it is.

I move that the Chairman appoint a Committee on Committees to consider which of those committees shall be permanent and standing committees and then to consider the suggestion and see whether it is worthy of adoption and report at the next meeting.

DR. A. C. BAKER: In regard to these committees I would like to say a few words. I would like to congratulate the Association upon the good work of the committees and although some of them have overlapped there has been no friction. We have had some wonderful committee work. The committees all have functionated and have made some wonderful reports.

DR. G. D. HEAD: I would like to endorse the remarks of the last speaker. At the end of this session I was going to congratulate you upon the fact that the chairmen of your committees have all rendered such fine reports before the House of Delegates today. I think it is a matter of congratulation, gentlemen. We ought to congratulate ourselves that we have had such a fine line of reports presented, and I cannot sympathize with the men who are complaining about lack of time in listening to the fine reports that have been made. These are important matters. We must listen to the ideas that are presented here and the fault lies with us; we are not doing anything. These men are rendering us reports and making suggestions and instead of having a lively session here with a discussion upon each of those reports we are simply in a perfunctory way adopting them and putting them on file and not discussing them or having an interchange of ideas.

The plan I presented a couple of years ago was that when a committee report was presented here, or when any resolution was presented, that, instead of acting upon it at the time it was presented, we have a system of reference committees; that our reference committees, most of them, be our standing committees; that whenever a resolution is presented, instead of acting upon it at the time it is presented, that the matter be referred to some reference committee, either arbitrarily by yourself or by vote of the House, and then the reference committee consider it and

present their report at the second session of the House of Delegates when there is an opportunity for all of us to hear the report.

Take Dr. Braasch's report on medical education. There are some very valuable suggestions in there that ought to receive consideration and there ought to be lively discussion and definite action and recommendation. Now, if that report be referred to a standing committee, which is a reference committee here in the House, and then this committee report on those recommendations at our second session; that will give us a chance to take action on each recommendation. As it is now I think the trouble is that we are too perfunctory in simply listening to the reading of the reports, putting them on file and doing nothing more. If a Committee on Committees is to be appointed I would suggest that they take up this matter as suggested of having reference committees to which all of these matters can be referred the first day of the session after the report has been read; and then the recommendations acted upon after the committee has given them due consideration and makes to the House some kind of recommendation.

That is the plan adopted by the House of Delegates of the American Medical Association, and those of us that have served in that House, and, I think Dr. Bell and others will agree with me, the plan is a most admirable one. It assures careful consideration of any subject of any importance that comes before the House of Delegates.

DR. J. C. LITZENBERG: I hope that my remarks will not be construed as a criticism of any committee, but I would have liked to have had a chance to read the reports before they were presented here. Perhaps Dr. Head's idea is better, but there ought to be some way by which we could get them before the House. If we could have had Dr. Braasch's recommendations before, so we could have digested them, we could have come here prepared for good, careful discussion and action. It is because the reports were so good that I would have liked to have read them over and not because they are so bad.

DR. G. D. HEAD: I might say that the reference committee system did not enlarge our roll of committees. It was adopted by the House of Delegates and these committees were made standing reference committees. I know that the Editing and Publishing Committee was made a standing committee and the committee on Hospitals and Medical Education and the committee on Public Health and the committee on Order and Public Business were all used as reference committees, so it did not add to our number of committees. It seems to me that the duplication arises between the Committee on Public Health and the Committee on Public Health and Education. Those two committees might be combined, otherwise I do not see any duplication.

DR. A. C. BAKER: It seems to me that we have this matter that Dr. Litzenberg has suggested in our hands. I feel that same way. I think the reports were very good but I cannot carry the points in my mind just from listening to them. This is entirely in our hands. I believe every delegate could act more intelligently and it is simply a question whether we want to do it or not.

DR. W. F. BRAASCH: I am in sympathy with the suggestions made by Dr. Litzenberg but, nevertheless, having had the other experience, I cannot agree with the sentiment

expressed by Dr. Head. The reports are read toto and the American Medical Association surely listen very attentively and get what they can out of the reports and then they are referred to a reference committee and this committee goes over and takes out the resolutions that it feels are important and brings them up for discussion. I think there must be some reason why the House of Delegates does not publish the reports and that reason is in all probability the matter of expediency. In other words, committees do not sometimes report in time and the bulletin given out might only contain half of the reports. Whereas theoretically it would be an ideal thing, there are probably a lot of practical difficulties in the way. I think it would be well to adopt the method in use by the House of Delegates of the American Medical Association.

THE PRESIDENT: Was Dr. Litzenberg's motion seconded?

DR. J. C. LITZENBERG: I wanted to move to have a committee to consider the question of committees and if advisable to combine two or three into one and make them do that. Or they could adopt Dr. Head's suggestion that we take care of these suggestions and resolutions by reference committees, or they could adopt my suggestion that they send the reports out in advance, and then come back with recommendations on the suggestions made. That is the way I make the motion, that a Committee on Committees be appointed to consider the best manner of handling the reports so the House of Delegates can best act on them.

(The motion was duly seconded and carried.)

THE PRESIDENT: I will appoint on that committee Drs. Head, Litzenberg, Parker, Burnap and Tuohy. On the committee on section work I will appoint Drs. Adair, Hunt, Braasch, Baker, Ewing.

THE SECRETARY: There is one matter I was requested to bring up, by some representative of the Woman's Club. They requested that we take action on the following resolution:

"Whereas, the United States has held the leadership in the movement for the establishment of an international court for a generation, and in the firm belief of methods of arbitration in the settlement of their disputes,

Therefore, Be It Resolved, That we, the Delegates of the Minnesota Medical Association, in convention assembled, approve the entrance of the United States in the permanent court of international justice."

(Upon motion duly made, seconded and carried, the resolution was referred to the Reference Committee.)

THE PRESIDENT: Any other new business? If not, a motion to adjourn is in order.

(The meeting was then adjourned until ten o'clock A. M., Friday morning.)

FRIDAY, OCTOBER 12, 1923—SECOND MEETING OF THE HOUSE OF DELEGATES

The House of Delegates met pursuant to adjournment at 10:30 A. M., and was called to order by the President.

The Secretary called the roll and the following members were present:

Blue Earth County—Dr. H. J. Lloyd, Mankato

Camp Release Dist.—Dr. E. M. Clay, Renville

Clay-Becker—Dr. F. A. Thysell, Moorhead

Hennepin County—Dr. L. A. Nippert, Minneapolis

Hennepin County—Dr. W. A. Jones, Minneapolis
 Houston-Fillmore—Dr. Cyrus B. Eby, Spring Valley
 Mower County—Dr. R. S. Mitchell, Grand Meadow
 Olmsted County—Dr. D. F. Hallenbeck, Rochester
 Olmsted County—Dr. A. H. Logan, Rochester
 Ramsey County—Dr. W. C. Carroll, St. Paul
 Ramsey County—Dr. E. C. Eshelby, St. Paul
 Ramsey County—Dr. Asa M. Johnson, St. Paul
 Ramsey County—Dr. J. A. Cameron, St. Paul
 Red River Valley—Dr. P. F. Melby, Thief River Falls
 St. Louis County—Dr. C. L. Haney, Duluth
 St. Louis County—Dr. O. W. Parker, Ely
 S. W. Minnesota—Dr. F. W. Metcalf, Fulda
 Stearns-Benton—Dr. W. L. Beebe, St. Cloud
 Wabasha County—Dr. D. S. Fleischhauer, Wabasha
 Washington County—Dr. J. W. Stuhr, Stillwater
 Wright County—Dr. L. Harriman, Howard Lake

The next order of business being election of officers, nominations for President were called for.

Dr. F. R. Weiser nominated for President, Dr. Archibald MacLaren. Another member nominated Dr. F. A. Dodge of LeSueur.

As there were no further nominations the names of Dr. MacLaren and Dr. Dodge were balloted upon, Dr. MacLaren receiving 20 votes and Dr. Dodge 7.

It was moved that the election be declared unanimous for Dr. MacLaren. This motion was seconded and carried.

The following officers were nominated and declared duly elected:

First Vice President—Dr. E. T. Sanderson, Minneota
 Second Vice President—Dr. F. J. Hirschboeck, Duluth
 Third Vice President—Dr. C. W. Bray, Biwabik
 Secretary—Dr. Carl B. Drake, St. Paul (re-elected)
 Treasurer—Dr. F. L. Beckley, St. Paul (re-elected)
 Councilor for the Sixth District—Dr. F. R. Weiser
 Councilor for the Eighth District—Dr. W. F. Braasch

THE PRESIDENT: During the past year I took the liberty to appoint two councilors, one for the First and one for the Fourth District, to replace Dr. C. E. Dampier and Dr. R. J. Hill, both deceased. There is nothing in the Constitution to authorize the President to do that but it seemed to me that these Districts should be represented and after consulting the other councilors I appointed Dr. Condit and Dr. Burnap to fill these vacancies. Shall these two men continue in office until the natural term expires?

A MEMBER: I move that these appointments be confirmed and that these men continue in office until the term expires. (Seconded and carried.)

Dr. J. C. Litzenberg was then elected as Delegate to the American Medical Association.

Dr. O. W. Parker was then elected as Alternate Delegate to the American Medical Association.

THE PRESIDENT: We will now hear the report of the Reference Committee.

DR. J. C. LITZENBERG: The members of the Reference Committee met to consider the propositions that were discussed in the first meeting of the House of Delegates. There were two plans that received enthusiasm in that discussion. One was a plan which had been discussed before and which Dr. Head revived; the other was a plan which I suggested, to the effect that the reports be sent to the House of Dele-

gates. It was the consensus of opinion that my suggestion would be rather cumbersome and, therefore, we beg leave to submit the following report:

First, we recommend that the chairmen of all committees submit a synopsis of their reports to the Secretary of the Association in sufficient time to be published in MINNESOTA MEDICINE, if the Secretary thinks they should be so published.

Secondly, all reports which contain recommendations for legislation by the House of Delegates shall be referred to a Reference Committee, which may be either a standing committee of the Association or a special committee, as the President may elect. All reports sent to the Reference Committee must be reported back to the House of Delegates at the second meeting of the session.

Third, your committee also recommends that the Committee on Public Health and the Committee on Public Health Problems in Education be combined into one committee, The Committee on Public Health.

Fourth, your committee also recommends the abolition of the Committee on Miscellaneous Business.

Respectfully submitted,
 GEORGE D. HEAD
 O. W. PARKER
 J. A. CAMERON
 ALBERT SHULTZ
 J. C. LITZENBERG, Secretary

THE PRESIDENT: Are there any discussions of this report?

A MEMBER: The day before yesterday the House of Delegates received a communication which was referred to the Reference Committee. This communication was from a certain women's club and asked for an expression of our opinion on the question of world participation by this country. I have nothing to say about the merits of the case but a good deal has been said in the last two days about the fact that the medical profession does not take an interest in outside affairs and I believe it would be wise to take up the matter. The Reference Committee should look into it and report to this body for action.

THE SECRETARY: Someone moved that this question be referred to the Reference Committee but no specific Reference Committee was named. It seems to be, however, that this matter could be handled very well by this body today.

A MEMBER: Mr. President, I move that we accept the suggestion of the Secretary and act upon the resolution at this time.

Seconded and carried.

A MEMBER: Mr. President, I move that the Report of the Reference Committee be accepted and that their recommendations be carried out so we can get this before the House for discussion.

Seconded and carried.

THE SECRETARY: Unfortunately, the copy of that resolution was handed to the official stenographer and I haven't it here. It was read at the other meeting and was to the effect that this Society go on record as being in favor of the United States' participation in the World Court. Personally, I believe that this is not a medical question, but the medical profession is certainly interested in future wars and I want to put my word in favor of passing this resolution. It won't accomplish very much, but it will put us on record as favoring this proposition.

DR. W. A. JONES: Mr. President, I move that the Secretary be instructed to participate in this movement and that we go on record as joining with him. (Laughter.)

THE PRESIDENT: Is there any further discussion?

DR. F. L. ADAIR: Mr. Chairman, I think we are acting on something we know very little about. We do not know the ins and outs and I am very much opposed to acting on resolutions in a blanket sort of manner and endorsing things that are entirely out of our sphere. If we were a body of lawyers we might act intelligently on this matter, but we are interested primarily in medical matters and in public health. The medical profession would be in more popular esteem if it would restrict its action to things it knows something about.

THE PRESIDENT: I am very much in sympathy with the action, but I doubt very much if we should recommend it. Is there any further discussion?

A MEMBER: I move that this matter be laid on the table. Seconded and carried.

THE PRESIDENT: The Secretary has just handed me the report of the Committee on Public Health Problems. It is a long report and the question is whether or not you want it read at this time.

A MEMBER: I believe that the report has not anything particular in it which needs to be acted on and I move that it be received and published with the proceedings of the meeting.

Seconded and carried.

THE SECRETARY: Mr. Chairman, I have a communication addressed to the Chairman of the Resolutions Committee from Dr. W. F. Bleifuss of Rochester, which is as follows:

"Dear Sir: As Chairman of the State Committee in charge of the health promotion campaign sponsored by the National Health Council, I have prepared the enclosed resolution for your consideration. If your committee sees fit, we should like to have it passed. The other members of the state committee are Dr. A. J. Chesley, Secretary State Board of Health; Dr. W. F. Wild, Secretary Minnesota Public Health Association; Dr. H. Diehl of the University, and the Secretary of the Minnesota State Medical Association, Dr. Drake. I will ask one of these to take this up with you tomorrow. I realize that very much cannot be expected from such a resolution, but it will help to get the matter before the doctors."

This is the resolution Dr. Bleifuss enclosed:

"WHEREAS, the need and value of periodic medical examinations of persons supposedly in good health are well known to physicians and are being increasingly appreciated by the public, and

"WHEREAS, the National Health Council, with the endorsement of the American Medical Association, has inaugurated a national campaign for the promotion of such examinations.

"BE IT RESOLVED, That the Minnesota State Medical Association endorse this campaign and call upon all County Medical Societies to take such steps as are most practicable to insure the extension of a thorough health examination service to the public, at a reasonable charge."

DR. W. A. JONES: Mr. President, how are we going to force people to be examined? We have a number of competitors engaged in the so-called "healing art" and they are not going to permit their patients to be examined. It is all well as far as it goes, but can we get to the people

who ought to be examined? Perhaps we could by some legal process. I understand that this is a nation-wide campaign, but can we really get to the bottom of the situation simply by asking medical societies to see that all people are examined once a year? We have to present a very good reason why people should be examined and the only way we can do it is to publish it in the daily papers and put it in as a plain medical advertisement that it is the opinion of the American Medical Association and the State Medical Society that everyone ought to be subjected to a yearly examination. Maybe we could get something done that way. We have to spend money for advertising, of course, but it would do good work. Possibly it would also elevate our profession to a dignified position.

A MEMBER: I think this is an extraneous organization and it should be understood if we endorse their actions that the work they carry on should be done in co-operation and in conjunction with the state and local medical societies. There are too many outside agencies that seek the endorsement of medical societies and then they go ahead and operate independently without very much consideration of the medical organization. I believe when we endorse these things we ought to tie a string to them so that things that are done are done through the medical organizations and not by any groups of medical men.

A MEMBER: Mr. President, I endorse the statements of the last speaker. At the present time we are having clinics in our town, too,—baby clinics and chest clinics. These clinics are put on without consulting any local men whatever. Somebody comes along and puts on a clinic, perhaps the Red Cross or the visiting nurses. Now, I do not think it is possible for any man to come into town and examine from thirty-five to forty chest cases from 11 o'clock in the morning to three o'clock in the afternoon and pass on them in an intelligent manner. Still, that thing is being done. People are told they have or have not tuberculosis just by means of the doctor's stethoscope and his hands and ears and eyes.

I do not think this should be done and we should not be hasty in entering into these things unless we know they are going to be done properly. A great deal of feeling has been worked up through these things.

The same thing is done in the baby clinics. Forty or fifty babies are brought down and a man examines all of them in three hours. Nothing whatever is said to the local men. I went down to one of these clinics and found out just what was being done. The man would say, "Go down to the drug store and buy some cod liver oil and feed it to the baby, or go to your family doctor." There should be no "or" about it! It should be sent back. That baby needs careful watching and care and it should be referred back. The local man should have something to say about these clinics.

I do not believe it is possible for any man to examine thirty-five or forty babies in such a short time unless he is a superman. I know sometimes I have difficulty in examining two cases but I may be just an ordinary idiot. These things should be taken very slowly.

A MEMBER: Mr. President, I do not believe that the doctors who are making these arguments have listened closely to the reading of this resolution and the letter which

preceded it. This is not an attempt to compel people to have examinations, but it is a request to the physicians of the local societies to take an interest in this matter. It seems to me that from that viewpoint the resolution is eminently proper.

At the request of the President the Secretary re-read the resolution.

THE SECRETARY: It is my impression that the National Health Council is part of the A. M. A. Does anyone know for sure?

A MEMBER: No, it is not. It is an independent organization.

DR. W. A. COVENTRY: Mr. President, there is a question which is running through this House all the time. Resolutions are brought up and read and passed and I venture to say that seventy-five per cent of the doctors do not know what they contain.

To my way of thinking, these resolutions should be received on the first day and referred to a committee to report on the second day of the session and in that way we will have some idea of what they are. I doubt very much if there are two per cent of us who know what this resolution is. We have no idea what the campaign is that is referred to.

DR. H. J. LLOYD: I feel as the last speaker does, that the resolution is rather vague. There is no definite plan. We do not know the plans of the proposed campaign and we do not know what is to be done. However, we do know that the work of the Health Association has been very good. I know in Mankato they put on a campaign which came through the members of the Society and the examinations were carried on by the physicians there as well as one sent by the Public Health Association. There was an x-ray available for them and very careful examinations were made. A good many people who could not afford to pay for examinations came and were found to be tuberculous. On the other hand, a great many people sneaked in and had examinations that should not have had them, which is often the case.

I think this is a movement we should go on record as supporting if it could be definitely shown what they are to do.

It was moved that this resolution be laid upon the table. Seconded and carried.

PRESIDENT: I think it would be advisable to have a committee appointed to look into the activities of some of the other states. It might help us to answer some of these questions.

I have been greatly interested in viewing the activity of other states in the formation of Health Leagues and things of that sort and I have noticed where these leagues have been formed they were very enthusiastic about the work they have done. Michigan, Colorado, California, Idaho, and any number of states have Health Leagues that are said to be very influential and I believe we should investigate them.

I know we have a Committee of 50 of which Dr. N. O. Pearce is Chairman and this Committee is doing very good work, but I think Dr. Pearce is doing all the work himself. Then, too, I do not believe he has quite the authority he

should have to go ahead and organize something in the way of a Health League.

I should like to have a motion presented to give the new President authority to appoint a committee to investigate the actions of other state societies and see if it would not be well for us to organize something of the same kind ourselves.

It was moved that this be reported to the Committee on Public Health.

Seconded and carried.

DR. W. A. COVENTRY: Mr. President, I would question the advisability of this resolution because unquestionably it requires a large amount of work and because the subject is of such importance that it deserves special consideration. Although I am sure that the Public Health Committee would be thoroughly competent to do it, nevertheless the question arises as to whether or not it would be advisable to have a special committee for this purpose.

At the same time, I wonder if the committee could not embody the question of postgraduate instruction as other states do. Then we could send men out to various portions of the state to meet the general practitioners and give them postgraduate instruction at a minimum of expense, effort and loss of time.

A MEMBER: Mr. President, it seems to me that it is rather unwise to multiply committees any more than we possibly can help. If we give the committees that have already been established work to do and investigations to carry on we have a better working organization than we would have if committees were appointed to take up special subjects, as has been suggested. When special committees are appointed it oftentimes leaves our standing committees with nothing to do unless they take up something themselves.

DR. SCOFIELD: I have been very closely connected with this work in the state for a great many years and the discussion here today has convinced me that the medical men of the state have very little knowledge of the work that these voluntary associations are attempting to do. The demand for this service is coming directly from the people and the demand is on the medical profession and we are not responding. We say, "Let these voluntary organizations stay out and the doctors will look after this," but the doctors are not doing it and they have not done it. That is why social workers with the assistance of nurses are doing these things and through this committee, I believe, the association could be made acquainted with the activities of these voluntary organizations. Then we could either endorse them or not, as we saw fit.

THE PRESIDENT: That is exactly what these Health Leagues have been doing,—organizing and getting a representative from each health association and trying to combine everything in one Health League so that there will be a definite organization and scheme for working.

A MEMBER: I think it is a mistake to multiply committees. When we have a Public Health Committee that is logically the place for it. Perhaps three men will not be enough to do the work that is necessary, but I believe that a committee functions much better when it has a real job to do. I am not in favor of a special committee for it but I do think it might be wise to allow the chairman of the

committee to add to the number of men on the committee those who might be specially interested in the work. If I were chairman of that committee I know I would want Dr. Judd's experience. I think everything of a Public Health nature should be taken care of by the Public Health Committee.

THE PRESIDENT: It is perfectly agreeable to me to have this go to the regular committee in Public Health matters, but perhaps calling their attention to some of the activities might be a good plan. The idea is that some one committee should feel it their duty to investigate the activities of the state societies and let us know about it.

Dr. Adair moved that this matter be referred to the Committee on Public Health.

Seconded and carried.

It was moved that the report of Dr. W. F. Braasch's Committee dealing with postgraduate instruction be referred to the Committee on Medical Education, said Committee to render a special report at the next session.

Seconded and carried.

THE PRESIDENT: Is there any new business to come before the House?

DR. J. C. LITZENBERG: I believe we have made a mistake in having any sections at all. This Society is not large enough for sections and I believe we should have one section and that it should be educational for the profession of the state. I think this is a good time to discuss that particular matter. To my mind, we should have the surgical and medical papers in one section, as this is for the profession of the state and not for specialists in particular. As a matter of fact, when the specialists write papers it is for themselves. This may raise some hullabaloo, but I like that. (Laughter.)

THE SECRETARY: Let us look at this from another standpoint. I have been a member of the Program Committee for three years and you will notice that the program in both sections is very crowded. If you are going to have but one section it means you have to have two more days for the meeting or else have just one-half as many papers.

DR. J. C. LITZENBERG: That would be better.

THE SECRETARY: Possibly it would, but there are a great many doctors who want to present papers. It amounts to almost the same thing as one section because you can step from one room to another so easily. I think it would be a mistake to have but one section.

A MEMBER: I want to say something in regard to the papers. Some of them were way over the heads of most of the doctors and others were on subjects in which the average doctor is not interested. I will not specify papers, but some of them were even over the heads of the surgeons in the surgical section—good surgeons, too.

There are two kinds of waste of time in papers. One is the paper that is no good and the other is the paper that is so good no one understands it. If those papers were eliminated the enthusiasm in our society would be like that in the Tri-State Society. Why are they so much more enthusiastic than we are? Because the papers interest everyone who goes.

DR. R. S. MITCHELL: Mr. President, the Secretary said it would be necessary to prolong the meeting for a day or two if it were put into one section. It occurred to me if this was done it might be of benefit to some of us fellows on the outside. It is often hard for members living 150

or 200 miles away to attend the full session. If the program were so arranged that one day could be given to obstetrics, another to surgery and another given to general medicine, etc., then we fellows on the outside could attend on the day or days on which subjects we are interested in were discussed and in this way we would not lose any time.

This morning I listened to a paper that was of no interest or use to me whatever. If there was but one section we could utilize our time to the best advantage.

DR. GEO. D. HEAD: I am very much in sympathy with Dr. Litzenberg's remarks with relation to the character of the work of our State Association in its scientific meetings, but on the other hand it seems to me that we must remember we have a certain educational duty to perform to the professional men of the state. I can illustrate my point no better than to give an instance in our medical session of yesterday. It was the paper of Dr. H. W. Christianson of Wykoff, "Thrombo-Angiitis Obliterans with Case Report." That is a very rare condition. I have never seen a case and recognized it, but he had seen this very interesting case and made a fine report of it. As far as I know, Dr. Christianson does not belong to any special scientific societies; he is a general practitioner. This is the only place general practitioners of the state have to bring something of real scientific interest to the attention of the profession and we must not forget that there must be interspersed throughout our programs considerable scientific work. A great deal of it is research that we as practical men may not be interested in and yet it seems to me that it is the duty of our organization to stimulate that sort of investigation and research. We should also report and put on record all these very important case reports.

It strikes me that we should consider the matter very carefully before altering our present plan of having the rather large number of papers read and discussed at our meetings.

The thing that occurred to me yesterday during our medical session was that the papers were too long drawn out. If the papers could be epitomized and the real meat of the thing boiled down and if less time were allotted to each man to present his paper, a great deal of time would be saved. It would also enable a larger number of men to participate.

It is a very good sign when we have a great many more men who want to present papers than we have place on the program for. I remember some years ago, as Chairman of the Medical Section, I had a very hard time getting enough papers from men that I knew were in a position to speak with some authority. If there are more men wanting to read papers than we have room on the program for, I say, let us encourage it.

DR. W. A. COVENTRY: It seems to me if we adopt the suggestion made by Dr. Litzenberg we will be going a step backwards. Practically every progressive society in the country has adopted this kind of a program. Some have gone even further.

There are two fundamental sections, medical and surgical, and that division has worked out the best in other state societies also.

It is my opinion that this year's program does not deserve much criticism. In fact, I am very proud of it and I think it is one of the best programs this society ever had. It

strikes me that it would be a mistake to change the present system.

Furthermore, having had some experience in a secretarial position, I think it is a good sign so many doctors wish to read papers and their wishes should be followed in this matter. If you cut down the number of sections they will certainly not be given an opportunity to read their papers.

DR. F. W. METCALF: I am a general practitioner. I do some surgery—I have to do it. I also do some obstetrics and some general medicine and I want to say I am going to relieve Dr. Litzenberg of mentioning what is on his mind. There was a paper by Dr. M. C. Bergheim of Hawley which was read and discussed in the surgical section which will be of wonderful help to every practitioner who heard him. At the same time there was work being presented in the medical section which I would like to have heard. I think both those who want one section and those who want two sections could get together on this in a very simple manner by having a general session in which subjects of general interest would be discussed and then have it divided into two sections where special topics could be taken up.

THE SECRETARY: We have two general meetings and sectional meetings besides.

DR. L. HARRIMAN: I cannot help but endorse the viewpoint of Dr. Litzenberg. I am in general practice myself, outside of the city, and as I was driving in this morning I thought if we had only one section it would be a great deal better. We are like small boys who go to a three-ring circus and try to see it all and so don't see anything.

DR. H. Z. GIFFIN: I am very much in favor of encouraging the men to present their papers in abstract. I think there has not been a paper given so far that could not have been reduced to at least two-thirds of the time. I would like to suggest that the time allotted to individual papers be reduced.

THE PRESIDENT: That is largely under the control of the Chairman of the Section although twenty minutes is the time allowed by the by-laws.

I have gone to the meetings of the different state societies year after year and I am more and more impressed with the fact that from a scientific standpoint no society is better than ours, in fact, most of them are not nearly so good. I should be very much opposed to changing anything now, as this society is big enough for two sections.

DR. LITZENBERG: Mr. President, I think what most of us want is to get more sessions for the general practitioner and perhaps that can be arrived at in a less radical manner. I think we all want about the same thing—less division.

DR. GEO. D. HEAD: It has always seemed to me that the President's address should be given at the dinner and not at an early hour to oftentimes a small group, such as we had this year. Very few men got out to hear it and when a President goes to the trouble to prepare an address it should be heard by the profession of the state.

DR. W. A. JONES: I believe that the Program Committee is responsible for things along this line and why should we interfere?

DR. GEO. D. HEAD: The trouble is that the Program Committee is not going to make any changes without authority or without some word from this House. I think we should have a special committee appointed to take up this matter.

THE PRESIDENT: The Program Committee is not a regular committee, but merely a group of men who meet two or three times a year and who act as a committee. However, I am sure they would be very glad to have suggestions from you.

It was moved that this matter be referred to a committee. Seconded and carried.

THE PRESIDENT: Is there any further new business?

DR. H. M. WORKMAN: I have a resolution here which was presented to the Council and the Council is referring it to the House of Delegates.

[The resolution submitted concerned claims on the part of the *Journal-Lancet* of being the journal of the Minnesota Medical Association. Considerable discussion took place.—Editor.]

DR. G. D. HEAD: In the interests of harmony in our association let us substitute this resolution for the one presented by the Council.

Resolved, that the House of Delegates in this session assembled request of the *Journal-Lancet* the discontinuance of any printing in any part of any future bound volume indicating that the *Journal-Lancet* in any way represents the State Medical Association.

It was moved that the resolution be adopted as stated.

Seconded and carried.

THE PRESIDENT: Is there any other new business to come before the House of Delegates?

THE SECRETARY: As you know, the constitution does not provide for the appointment of committees by the incoming President, so each year a motion has to be made that the incoming President appoint the new committees for the ensuing year. I would like to make that motion.

Seconded and carried.

DR. W. L. BEEBE: Mr. Chairman, last year as a delegate I was instructed to invite this meeting to come to St. Cloud. I was pretty badly thrown into the air, so it took me quite a while to get back and this year without any authority I will take it upon myself to repeat that invitation from Stearns County. We would be very glad to have you meet at St. Cloud next year.

It was moved that Dr. Beebe's invitation be accepted.

Seconded and carried.

THE PRESIDENT: I am sure we appreciate this invitation and I know we will have an enthusiastic meeting in St. Cloud.

The President appointed a committee consisting of Dr. W. L. Beebe and Dr. Geo. D. Head to conduct the President to the platform at the afternoon session.

DR. GEO. D. HEAD: I am very sorry, Mr. Chairman, but I will be unable to attend the meeting this afternoon.

THE PRESIDENT: That will be all right and I appoint Dr. M. H. Workman in your stead.

The Chair would like to have someone make a motion to the effect that the Secretary thank the members of the Ramsey County Medical Society and the Masonic bodies here for their many kindnesses and courtesies in making this a most enjoyable and satisfactory meeting.

Such a motion was made, seconded and carried.

As there was no further business to come before the meeting, on motion, duly seconded and carried, the House of Delegates adjourned *sine die*.

AUDIT REPORT OF MINNESOTA STATE MEDICAL
ASSOCIATION, OCTOBER 12, 1922, TO
OCTOBER 10, 1923

October 19, 1923.

Minnesota State Medical Association,
St. Paul, Minnesota.

Gentlemen:—

Pursuant to instructions received from your Executive Secretary, Mr. J. R. Bruce, we have made an audit of the books and records of the Minnesota State Medical Association for the period of October 12, 1922, to October 10, 1923, inclusive, and submit our report in the accompanying comments, and statements as follows:

EXHIBIT A—Statement of Cash Receipts and Disbursements.

EXHIBIT B—Balance Sheet as of October 10, 1923.

EXHIBIT C—Statement of operations of MINNESOTA MEDICINE—publication.

SCHEDULE 1—BANK RECONCILIATION

In the course of the audit we reconciled the bank balance, counted the securities in the possession of the Treasurer, and otherwise made such tests of the books and accounts as we deemed sufficient to satisfy ourselves of their correctness, and as a result of which,—

WE HEREBY CERTIFY, That in our opinion, the balance sheet, Exhibit B, presents the true financial condition of the Association and the Statement of Receipts and Disbursements, Exhibit A reflects the operations of the Association for the period under review, October 12, 1922, to October 10, 1923.

Respectfully submitted,
ARNOLD, FLESHER & COMPANY,
By BENJ. H. FLESHER.

EXHIBIT A

MINNESOTA STATE MEDICAL ASSOCIATION STATE-
MENT OF CASH RECEIPTS AND DISBURSE-
MENTS FOR THE PERIOD OCTOBER 12,
1922, TO OCTOBER 10, 1923

RECEIPTS OF INCOME:

Membership Dues	\$ 9,515.00
Membership Dues in Arrears.....	60.00
Advertising	7,681.42
Subscriptions	330.75
Interest on Mortgages.....	189.00
Interest on Bonds.....	160.00
Interest on Bank Balances.....	93.70
Total	\$18,029.87

DISBURSEMENTS OF EXPENSES:

Publication—MINNESOTA MEDICINE.....	\$10,352.08
Legal	2,683.71
Salaries	1,450.00
Convention (Minneapolis, 1922) ..	728.32
Council	170.02
Legislative Committee	465.97
Publicity	15.25
Sundries	595.21
Total	16,460.56

NET INCOME \$1,569.31

OTHER DISBURSEMENTS:

Purchase of Mortgage Bond—3 Yrs. 6 per cent.....	2,000.00
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EXCESS OF DISBURSEMENTS OVER RE- CEIPTS FOR THE PERIOD.....	\$430.69
BALANCE, October 12, 1922.....	3,903.44

BALANCE, October 10, 1923—On De-
posit with the Minnesota Transfer
State Bank \$3,472.75

EXHIBIT B

MINNESOTA STATE MEDICAL ASSOCIATION
BALANCE SHEET, OCTOBER 10, 1923

ASSETS

Cash in Bank.....	\$3,472.75
Accounts Receivable	1,861.52
Northern Pacific Bonds.....	4,000.00
First Mortgage Bonds.....	4,700.00
Furniture and Fixtures.....	286.00

Total Assets \$14,329.27

LIABILITIES

None 0 0

NET WORTH..... \$14,320.27

EXHIBIT C

MINNESOTA STATE MEDICAL ASSOCIATION STATE-
MENT OF OPERATIONS OF MINNESOTA MEDI-
CINE PUBLICATION, OCTOBER 12, 1922.
TO OCTOBER 10, 1923

REVENUE:

Advertising	\$7,681.42
Subscriptions	330.75
Membership Subscription Allow- ance—1,893 Members at \$2 each	3,786.00
Members in Arrears—27 at \$2 each	54.00
*Accounts Receivable—Advertising October 10, 1923	1,861.52

Total \$13,713.69

EXPENSES:

Printing	\$4,136.00
Paper Stock	1,271.55
Editorial	2,228.52
Advertising Commission (Bruce Pub. Co.)	1,682.44
Postage	311.00
Envelopes	142.67
Stenographic Service	535.00
Miscellaneous	44.90
*Accounts Receivable—Advertising October 12, 1922.....	1,920.69

Total 12,272.77

Net gain for the period October 12, 1922,
to October 10, 1923 \$1,440.92

* NOTE—Advertising is not considered as income on the books until received in cash. In this statement it is the desire to take into account unearned advertising, and as a result the amount of uncollected advertising is shown as indicated.

SCHEDULE B-1

MINNESOTA STATE MEDICAL ASSOCIATION
BANK RECONCILIATION
SEPTEMBER 30, 1923

Cash Balance per Books \$3,472.75

Plus Outstanding Checks:

No. 334	\$30.00
No. 335	164.27
No. 336	673.68
No. 337	100.00
No. 338	1.00
No. 339	7.45
No. 340	11.95
No. 341	4.00
	992.35

\$4,465.10

Less deposits made in October:

Northern Pacific Bond Coupons....	\$160.00
Bruce Pub. Co. Com. Refund.....	36.69
Advertising Receipts	80.56
Membership Dues	25.00

302.25

Cash Balance per Bank Statement..... \$4,162.85

COMMENTS

EXHIBIT A—The statement of cash receipts and disbursements is designed to show the results of the operation of the association for the period October 12, 1922, to October 10, 1923, on a cash basis. This would indicate that all the income for the period was collected and all the expenses were paid.

It will be noted that the association shows a net profit of \$1,569.31 for the period, and that this sum together with another sum of \$430.69, was invested in a 6 per cent First Mortgage Bond of \$2,000.00, maturing in three years. After making this investment there remained a balance of \$3,472.75, to the credit of the association, in the Minnesota Transfer State Bank.

In explanation of some of the items appearing in the statement of receipts and disbursements, we would call your attention to the following:

Convention \$728.32—This is the amount spent in holding the 1922 convention in Minneapolis.

Legislative Committee: \$465.97—This is the amount spent by the committee for stationery, postage, multigraphing, etc.

Council: \$170.02—This amount was expended in connection with the trip of Dr. Workman in attending the Minneapolis Council meeting and stationery.

Sundries: \$595.31—This item consists of expenditures for wages, stationery, postage, insurance, and sundry office expense.

EXHIBIT B—BALANCE SHEET. This is a detailed statement of the Assets and Liabilities of the association, at October 10, 1923. This statement was prepared from information and data furnished, as no ledger accounts were kept. The profit shown in Exhibit A cannot be reconciled with the amounts shown in this statement as a result of the absence of ledger accounts.

EXHIBIT C—This statement purports to show the operating results in connection with the publishing of MINNESOTA MEDICINE. While no special records are maintained to show actual income and expense of the publication, it is, nevertheless, possible to secure the information from the books of the association.

It might be well to explain that the members of the association do not directly subscribe to the magazine, but pay for it indirectly through the dues. Therefore, to ascertain the revenue which the publication would be entitled to, the membership is arbitrarily assessed \$2.00 each. In this statement the subscription revenue is computed on a basis of 1,893 members in good standing and 27 members in arrears. It will be noted that by giving the publication its allotment of \$2.00 per member, its operations show a net profit of \$1,440.92, for the period under review.

In conclusion, we would state that although no ledger accounts were maintained, the records employed by the association were found to be in good condition, and no discrepancies were found.

In accordance with the instructions of the secretary, we installed a double entry system of bookkeeping which, if maintained properly, will at all times show the correct operations of the association.

THE MINNESOTA STATE MEDICAL ASSOCIATION 1923

MINUTES OF THE GENERAL SESSION

The general session was called to order at the Masonic Temple, St. Paul, October 11, 1923, at 8:10 o'clock A. M., by President E. Starr Judd, M.D., Rochester, Minnesota, who thereupon read the Presidential Address.

Dr. F. J. Savage then read a paper on "Why Has the Medical Profession Lost the Position It Once Held in the Esteem of the Public?" It was discussed by Dr. Strickler, Dr. Olin West, Secretary of the A. M. A., Dr. J. T. Christison, St. Paul, the discussion being closed by the essayist.

Senator J. D. Denegre, St. Paul, then spoke on the subject: "Association and Fair Play"; after which the general session adjourned.

MINUTES OF THE MEDICAL SECTION

Chairman, Dr. H. Z. Giffin, Rochester; Secretary, Dr. A. C. Baker, Fergus Falls.

FIRST DAY—THURSDAY, OCTOBER 11th

The first session of the Medical Section of the Fifty-fifth Annual Meeting of the Minnesota State Medical Association was called to order in the Masonic Temple, St. Paul, at 10:10 A. M. by the Chairman.

Dr. H. M. Conner, Rochester, read a paper on "Differential Diagnosis of Conditions Associated with Splenomegaly," which was discussed by Dr. Edward L. Tuohy, Duluth; Dr. J. P. Schneider, Minneapolis; Dr. H. T. Helmholtz, Rochester, and the Chairman.

Dr. C. Eugene Riggs, St. Paul, presented a paper on "Preliminary Note—A Study of the Nervous Syndrome and the Blood Serum in Pernicious Anemia as an Aid in Diagnosis Before Recognizable Changes Are Apparent." Discussion by Dr. Gilbert Kvitrud, St. Paul; Dr. C. R. Ball, St. Paul; Dr. Henry Woltman, Rochester; Dr. H. M. Conner, the essayist, and the discussion was closed by Dr. Kvitrud.

Under the general head of "Symposium on Non-pulmonary Tuberculosis," the following papers were read: "Cutaneous Manifestations of Tuberculosis," by Dr. John H. Stokes, Rochester; "Tuberculosis of the Bones and Joints," by Dr. Carl C. Chatterton, St. Paul; "Genito-Urinary Tuberculosis," by Dr. Herman C. Bumpus, Rochester; "Gastro-Intestinal Manifestations of Tuberculosis," by Dr. Walter J. Marckley, Minneapolis; and "Heliotherapy in the Treatment of Tuberculosis," by Dr. J. Harry Bendes, Oak Terrace. Discussion was opened by Dr. W. S. Lemon, Rochester, and continued by Dr. E. Mariette, Minneapolis; Dr. Miron, Dr. H. T. Helmholtz, Rochester; Dr. J. A. Myers, Minneapolis.

Dr. George B. Eusterman, Rochester, read a paper on "Relation of Recurrent or Secondary Peptic Ulcers to Focal Infection." Discussion by Dr. Robert L. Rizer, Minneapolis. Dr. O. C. Strickler, New Ulm, and the discussion was closed by the essayist.

Dr. F. J. Hirschboeck, Duluth, read a paper on "Massive Collapse of the Lung." Discussion by Dr. George E. Fahr, Minneapolis; Dr. George D. Head, Minneapolis; Dr. Edward L. Tuohy, Duluth, closed by the essayist.

Dr. John M. Lajoie presented a paper on "Bronchial Asthma," which was discussed by Dr. C. B. Wright, Minneapolis; Dr. C. N. Hensel, St. Paul, and closed by the essayist.

Dr. H. W. Christianson read a paper on "Thrombo-Angiitis Obliterans with Case Report." Discussed by Dr. J. F. Corbett, Minneapolis; Dr. Emil S. Geist, Minneapolis; Dr. Edward Evans, La Crosse, Wis.; Dr. S. H. Boyer, Duluth, and Dr. H. L. Ulrich, Minneapolis, discussion being closed by the essayist.

Dr. F. A. Willius, Rochester, then read a paper on "Syphilitic Aortitis." Discussion by Dr. John H. Stokes, Rochester; Dr. H. L. Ulrich, Minneapolis; Dr. Edward L. Tuohy, Duluth; Dr. C. N. Hensel, St. Paul, and Dr. S. M. White, Minneapolis, and closed by the essayist.

Under the "Symposium of Diabetes and Insulin," the following papers were read: "The Treatment of Simple Cases of Diabetes," by Dr. A. H. Beard, Minneapolis; "Present Indications for the Use of Insulin," by Dr. Edward

L. Tuohy, Duluth; "Hypoglycemia," by Dr. J. B. Collip, Edmonton, Alberta; "The Treatment of Emergencies in Diabetes," by Dr. R. M. Wilder, Rochester. Discussion was opened by Dr. S. Marx White, Minneapolis, and closed by Dr. J. B. Collip, Edmonton, Alberta.

MINUTES OF THE SURGICAL SECTION

Chairman, Dr. H. B. Zimmerman, St. Paul; Secretary, Dr. Gilbert J. Thomas, Minneapolis.

FIRST DAY—OCTOBER 11th

The first session of the Surgical Section was held in the Masonic Temple, St. Paul, and was called to order at 9:20 A. M. by the Chairman.

In a "Symposium on Diseases of the Gallbladder," Dr. J. P. Schneider, Minneapolis, read a paper entitled "Differential Diagnosis"; Dr. Frank Bissell, Minneapolis, read a paper on "Roentgenological Diagnosis"; Dr. Harry P. Ritchie, St. Paul, on "Surgical Diagnosis"; Dr. Arnold Schwyzer, St. Paul, on "Surgical Treatment."

These papers were then discussed by Dr. Evarts A. Graham, St. Louis; Drs. E. Starr Judd, Rochester; Arthur T. Mann, Minneapolis; Edward Evans, La Crosse, Wis.; Theo. Bratrud, Warren; A. MacLaren, St. Paul; R. E. Farr, Minneapolis; and in closing by the essayists.

The second session of the Surgical Section was held in the Masonic Temple, St. Paul, and was called to order at 2 P. M. by the Chairman.

Dr. F. G. Watson read a paper entitled "Report of a Case of Rupture of the Kidney," which was discussed by Drs. Gilbert J. Thomas, Minneapolis; A. C. McGee, Deer River; R. E. Farr, Minneapolis; F. W. Metcalf, Fulda; and H. L. Parker, Rochester.

Dr. A. W. Adson, Rochester, read a paper on "The Surgical Treatment and Results of Spinal Cord Tumors," which was discussed by Drs. J. Frank Corbett, Minneapolis; R. E. Farr, Minneapolis, and in closing by Dr. Adson.

Dr. W. A. Fansler, Minneapolis, read a paper on "The Rectum as a Factor in Chronic Focal Infections," which was discussed by Dr. L. A. Buie, Rochester.

Dr. T. W. Weum, Minneapolis, read a paper entitled "Extra-Uterine Pregnancy," which was discussed by Drs. F. L. Adair, Minneapolis; L. W. Barry, St. Paul; W. A. Coventry, Duluth; V. J. Hawkins, St. Paul, and in closing by the essayist.

Dr. H. I. Lillie, Rochester, followed with a paper entitled "The Ear in General Medical Diagnosis," which was discussed by Drs. Horace Newhart, Minneapolis; and Charles N. Spratt, Minneapolis.

Dr. Gordon B. New, Rochester, read a paper entitled "Actinomycosis of the Head and Neck," which was discussed by Drs. Edward Evans, La Crosse, Wis.; A. H. Sanford, Rochester, and in closing by the essayist.

Dr. W. A. Coventry, Duluth, followed with a paper entitled "Metastasis from Breast Cancer," which was discussed by Dr. James A. Johnson, Minneapolis; W. E. Sistrunk, Rochester; C. A. Donaldson, Minneapolis, and in closing by the essayist.

Dr. F. J. Pratt, Minneapolis, followed with a paper entitled "Apparent Deformity of the Pillars of the Fauces After Tonsillectomy," which was discussed by Drs. Wm. R. Murray, Minneapolis; Carl Larsen, St. Paul, and again by Dr. Pratt.

Adjourned.

ANNUAL BANQUET

The banquet was held in the Palm Room of the Saint Paul Hotel at 6:30 P. M., October 11, 1923. Dr. Arthur Sweeney, St. Paul, officiated as toastmaster, and after the musical program the toastmaster introduced the following gentlemen, who spoke upon various subjects: Dr. J. B. Collip, University of Alberta, Edmonton, Alberta; Dr. Evarts A. Graham, Washington University School of Medicine, St. Louis, Mo.; Dr. Olin West, Secretary of the American Medical Association, Chicago, Ill.; Dr. Clemens Freiherr Pirquet of the University of Minnesota, and Dr. Charles H. Mayo, Rochester.

MINUTES OF THE MEDICAL SECTION

Chairman, Dr. H. Z. Giffin, Rochester; Secretary, Dr. A. C. Baker, Fergus Falls.

SECOND DAY—FRIDAY, OCTOBER 12th

The second session of the Medical Section of the Fifty-fifth Annual Meeting of the Minnesota State Medical Association was called to order in the Masonic Temple, St. Paul, at 8:10 A. M., by the Chairman.

Dr. T. L. Birnberg read a paper on "Concentrated Food in Infant Feeding." Discussion by Dr. Clemens Pirquet, Dr. J. T. Christison, St. Paul, closed by essayist.

Dr. H. T. Helmholtz, Rochester, read a paper on "The Diagnosis of Acute Appendicitis in Children." Discussion by Dr. F. C. Rodda, Minneapolis; Dr. E. S. Judd, Rochester; Dr. Roy Andrews, Mankato; Dr. T. L. Birnberg, St. Paul; Dr. H. Z. Giffin, Dr. R. C. Logefield, Minneapolis, closed by the essayist.

Dr. F. L. Adair, Minneapolis, presented a paper on "Hypertension in Pregnancy." Discussion by Dr. E. L. Gardner, Dr. A. G. Schulze, St. Paul; Dr. Archibald McDonald, Duluth; Dr. F. J. Hirschboeck, Duluth; Dr. J. C. Litzenberg, Minneapolis, closed by the essayist.

Dr. Hilding C. Anderson, Duluth, gave an address on "Experimental Renal Insufficiency and Hypertension." Discussion by Dr. E. T. Bell, Minneapolis; Dr. S. H. Boyer, Duluth, and Dr. G. E. Fahr, Minneapolis.

Dr. Leo G. Rigler read a paper on "Chronic Nephrosis" by Drs. Leo C. Rigler and Harold Rypins, Minneapolis. Discussion by Dr. M. H. Nathanson, Minneapolis, and Dr. Edward L. Tuohy, Duluth.

Dr. J. L. Crewe, Rochester, read a paper on "Rest and Diet in the Treatment of Cardio-Vascular Disease." Discussion by Dr. John H. Moore, Grand Forks, N. D., closed by essayist.

Dr. Frank Whitmore read a paper on "Congenital Syphilis of the Nervous System with a Report of Juvenile Tabes in Twins." Discussed by Dr. J. C. McKinley, Minneapolis; Dr. E. D. Anderson, Minneapolis; Dr. O. W. Parker, Ely; Dr. Paul Berrisford, St. Paul; discussion closed by the essayist.

Dr. Edward J. Engberg read a paper on "Psycho-Neurosis." Discussion by Dr. A. S. Hamilton, Minneapolis; Dr. H. Woltman, Rochester, and closed by the essayist.

Dr. E. M. Hammes' paper on "Epidemic Encephalitis" was then read.

SURGICAL SECTION

SECOND DAY—FRIDAY MORNING, OCTOBER 12th

The third session of the Surgical Section was held in the Masonic Temple, St. Paul, and was called to order at 8:20 A. M. by the Chairman.

Dr. Paul Berrisford, St. Paul, read a paper entitled

"Headaches from the Standpoint of the Ophthalmologist," which was discussed by Drs. John Fulton, St. Paul; Homer Collins, Duluth, and in closing by the essayist.

Dr. M. C. Berghheim, Hawley, read a paper on "Obstetrics and the Country Practitioner," which was discussed by Drs. J. C. Litzenberg, Minneapolis; W. E. Richardson, Pipestone; W. A. Coventry, Duluth, and again by Dr. Berghheim.

Dr. Donald C. Balfour, Rochester, followed with a paper entitled "Factors of Safety in Gastric Surgery," which was discussed by Drs. A. C. Strachauer, Minneapolis; Arnold Schwyzer, St. Paul; William Mayo, Rochester; Theo. Bratrud, Warren; and in closing by the essayist.

Dr. Frederick E. B. Foley, St. Paul, read a paper on "Diagnosis of Anomalous Renal Artery as a Cause of Upper Urinary Tract Stasis," which was discussed by Drs. Gilbert J. Thomas, Minneapolis; Wm. F. Braasch, Rochester; William Mayo, Rochester; A. C. Strachauer, Minneapolis; Arnold Schwyzer, St. Paul; and in closing by the essayist.

In a "Symposium on Fractures of the Femur," Dr. Wallace Cole, St. Paul, read a paper entitled "Anatomy and Mechanics of Fractures of the Femur"; Dr. H. W. Meyerding, Rochester, read a paper on "Non-Operative Treatment"; Dr. Charles A. Reed, Minneapolis, on "Operative Treatment," and Dr. Alex Colvin, St. Paul, a "Clinic." These papers were discussed by Drs. A. E. Wilcox, Minneapolis; E. K. Green, Minneapolis; W. E. Richardson, Pipestone; R. O. Earl, St. Paul; A. E. Benjamin, Minneapolis; Arnold Schwyzer, St. Paul; H. B. Zimmerman, St. Paul. The discussion was closed by the essayist.

Adjourned.

GENERAL SESSION

The general meeting was held in the Masonic Temple at 2 P. M., October 12th, and presided over by President Judd. After the meeting was called to order Dr. Judd appointed Dr. Workman and Dr. Beebe to escort the newly elected President to the platform.

THE PRESIDENT (Dr. Archibald MacLaren): Gentlemen of the State Association: I have always been very proud to be a member of the Minnesota State Medical Association and the finer standard of men and women making up its membership having increased from year to year in my experience makes me doubly proud to have this honor which you have conferred upon me, and I thank you very much.

DR. JUDD: The next order of business is the report of the House of Delegates.

THE SECRETARY: Mr. President, the House of Delegates met on Wednesday afternoon and again this morning. At the meeting this morning the following officers were elected: Dr. Archibald MacLaren, St. Paul, President for 1924; Dr. E. T. Sanderson, Minneota, First Vice President; Dr. F. J. Hirschboeck, Duluth, Second Vice President; Dr. C. W. Bray, Biwabik, Third Vice President. The Treasurer, Dr. F. L. Beckley, was re-elected and the present Secretary was also re-elected. Dr. Braasch and Dr. Weiser were also re-elected councilors for their respective districts.

Of the total membership of the Association this year, 1,884, there was a registration of 517 up to this noon, which is some one hundred better than last year. This total membership in the Association is 78 more than a year ago. The Treasurer reports an increase in the assets of the Association of about \$1,500. The House of Delegates decided to hold in the future their second meeting on the

second day instead of the third day. A special committee was appointed by the House of Delegates to consider the question of programs, that is, to consider the advisability of having just one section instead of two, or having more of the combined meetings, and also report on the advisability of dividing the surgical section into more than one section.

DR. JUDD: Because of the long scientific program this afternoon it seemed best to the officers to divide this program into two parts, have part of it in this room and part in the room that has been used by the Medical Section. So we have divided it. Dr. Woltmann's paper and the symposium on metabolism will be given in the room that has been used by the Medical Section, the other papers in this room.

MINUTES OF THE MEDICAL SECTION

Chairman, Dr. H. Z. Giffin, Rochester; Secretary, Dr. A. C. Baker, Fergus Falls.

AFTERNOON SESSION—FRIDAY, OCTOBER 12th

Dr. H. W. Woltmann read a paper on "Consideration of Some Neurologic Disorders Associated with Pain and General Diagnosis." Discussion by Dr. A. S. Hamilton, Minneapolis, and Dr. L. A. Nippert, Minneapolis.

Under the title of "Symposium on Metabolism," the following papers were read: "The Factors in Health and Disease That Affect the Metabolic Rate," by Dr. Max H. Hoffman, St. Paul; "The Value of the Basal Metabolic Rate in Surgical Practice," by Dr. T. L. Chapman, Duluth; "The Value of the Basal Metabolic Rate in General Medical Practice," by Dr. A. E. Mark; "The Significance of the Total and Basal Metabolism in Exophthalmic Goiter," by Dr. Walter M. Boothby, Rochester. Discussion was opened by Dr. H. S. Plummer, Rochester, and continued by Dr. Walter M. Boothby.

Adjourned.

SURGICAL SECTION

SECOND DAY—FRIDAY AFTERNOON, OCTOBER 12th

The last session of the Surgical Section was called to order at 2:40 P. M. by the Chairman, following the short general session.

Dr. H. L. Parker, Rochester, read a paper entitled "The Clinical Significance of Pain in the Area Supplied by the Fifth Cranial Nerve." This paper was discussed by Drs. Angus W. Morrison, Minneapolis; E. E. McGibbon, Minneapolis; T. B. Hartzell, Minneapolis, and Arnold Schwyzer, St. Paul; after which the discussion was closed by the essayist.

Dr. E. Mariette, Minneapolis, read a paper entitled "Medical Considerations of Extra-Pleural Thoracoplasty."

Dr. A. A. Law, Minneapolis, read a paper entitled "Surgical Considerations of Extra-Pleural Thoracoplasty."

These two papers were discussed by Drs. J. A. Myers, Minneapolis; Harry P. Ritchie, St. Paul; Arnold Schwyzer, St. Paul, and in closing by the essayists.

Dr. Horace Newhart, Minneapolis, read a paper on "Problems in Relation to the Hard of Hearing," which was discussed by Drs. Carl Larsen, St. Paul, and T. B. Hartzell, Minneapolis.

Dr. Ruth Boynton, Minneapolis, read a paper entitled "Report on the Midwife Situation in Minnesota," which was discussed by Drs. F. L. Adair, Minneapolis; J. C. Litzenberg, Minneapolis; Olga Hansen, Minneapolis, and E. A. Zaworski, Minneapolis.

Adjournment.

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